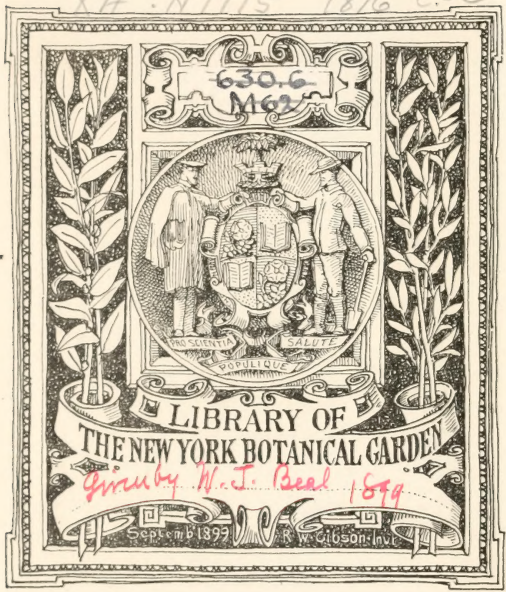


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SIXTH ANNUAL REPORT
OF THE
S E C R E T A R Y
OF THE
STATE POMOLOGICAL SOCIETY
OF
MICHIGAN.

1876.

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REPORT OF THE SECRETARY

OF THE

MICHIGAN STATE POMOLOGICAL SOCIETY.

DETROIT, MICH., December 31, 1876.

To Hon. E. G. D. Holden, Secretary of State :

SIR,—Section six of an act to provide for the incorporation of societies for the promotion of pomology, horticulture, and the kindred sciences and arts, in the State of Michigan, approved April 15, 1871, provides that “it shall be the duty of the Secretary of said State society to make and transmit to the Secretary of State a report of the transactions of said society, including copies of papers read at its meetings, reports of exhibitions held, and of facts collected by correspondence or otherwise, at the end of the month of December of each year, said report to be printed in similar form and number of copies as the reports and transactions of the State Board of Agriculture and State Agricultural Society, under the direction of the Secretary of State.”

In compliance with the above legal requisition, I respectfully submit for publication the accompanying Report for 1876, with supplementary papers.

The report for 1875 included some papers read and exhibitions held in the year 1876, and, consequently, this report is necessarily brief, and brings the work of the Society down to January 1, 1877. At this point Mr. C. W. Garfield, of the Agricultural College, Lansing, succeeds me; and to him I am indebted for much valuable assistance in the preparation of this report, and for his efforts in behalf of Michigan Horticulture and Pomology, I bespeak for him a kind greeting from their many earnest and intelligent friends throughout the State.

J. P. THOMPSON.

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CONSTITUTION
OF
THE MICHIGAN STATE POMOLOGICAL SOCIETY.

ARTICLE I.—OBJECT.

The object of the Society is to develop facts and promulgate information as to the best varieties of fruit for cultivation in the State of Michigan, and the best methods of cultivation.

ARTICLE II.—OFFICERS.

The officers of the Society shall consist of a President, a Vice President in each county so far as may be deemed necessary or practical; a Secretary, and as many local Secretaries as may be deemed necessary; a Treasurer, and an Executive Committee of six members, exclusive of the President, Secretary, and Treasurer, who shall be members *ex officio*. Of this committee four shall constitute a quorum for the transaction of business at any meeting of said committee: *Provided*, Each member shall have been notified in the usual manner of such meeting. All the above officers to be elected annually by ballot, except the Executive committee, whose terms of office shall be so arranged that two vacancies shall occur annually.

ARTICLE III.—ANNUAL MEETING.

The annual meeting for the election of officers shall be on the first Tuesday in December in each year; the officers elected at such meeting to commence service on the first of January following.

ARTICLE IV.—EXPIRATION OF TERM OF OFFICE.

The officers shall remain and perform their respective duties until their successors are elected and have accepted, but the regular term of office shall expire on the 31st of December in each year.

ARTICLE V.—TIME OF HOLDING MEETINGS.

The Society may hold a meeting on the first Tuesday of each month, at such place as the Executive Committee shall designate.

ARTICLE VI.—MEMBERSHIP FEE.

Every person who subscribes, or who may subscribe to these articles, and pays

to the Treasurer the sum of one dollar per annum in advance, shall be entitled to membership, unless otherwise voted at a regular meeting of the Society.

ARTICLE VII.—DISBURSEMENTS.

No money shall be disbursed except on an order signed by the President and countersigned by the Secretary by direction of the Executive Committee.

ARTICLE VIII.—AMENDMENTS.

These articles may be amended at any regular meeting of the Society, by a majority vote of such meeting, provided one month's notice shall have been given of such amendment.

ARTICLE IX.—AMOUNT OF PROPERTY.

The Society may hold personal and real estate to the amount of twenty thousand dollars.

ARTICLE X.—BY-LAWS.

By-laws may be passed at any regular meeting, but a month's notice may be required.

ARTICLE XI.—TREASURER'S BONDS.

The Executive committee shall require of the Treasurer such security as they may deem necessary for the safe keeping and proper disbursement of the funds of the Society in his hands.

BY-LAWS.

[Adopted December, 1872.]

SECTION I.—THE PRESIDENT.

1. The President shall be the executive officer of the Society, and of the Executive Board.

2. He shall see that the rules and regulations of the Executive Board are duly observed and enforced, and in the absence of established rules touching particular cases and when beyond the reach of the Executive Board, he shall have power to institute rules, by and with the consent of the Secretary, provided such rules be not in conflict with any established by the Board, subject, however, to the action of the Executive Board at its subsequent meeting.

3. In conjunction with the Secretary, the President shall prepare regularly an order of business for the meetings of the Society.

4. The President shall have the best interests of the Society at heart, and shall lead in forwarding any enterprise that shall add to the use or popularity of the Association, but shall not have power to act upon any important matter connected with the Society without first consulting the Executive Board.

SECTION II.—VICE-PRESIDENTS.

Any one of the Vice-Presidents shall, in the absence of the President, at any meeting, preside and perform the duties of said office.

SECTION III.—SECRETARY.

1. The Secretary shall be the recording, corresponding, financial, auditing, and accounting officer of this Society.

2. He shall attend all meetings of this Society and Executive Board, and shall keep an accurate and faithful record of the proceedings. He shall sign all certificates of membership, all awarded diplomas, and have charge of the Society's books and papers, and any other property given into his care by the Society, and shall be responsible for the same.

3. He shall also be custodian of the seal of the Society, and affix the same to all important documents.

4. He shall seek by every praiseworthy means to have the meetings of the Society announced in a public manner throughout the State, and shall use every endeavor to have the important proceedings of the Society, as well as the prominent papers, read before the meetings, published, and thus placed in the hands of all the interested inhabitants of the State.

5. It shall be his duty each year to prepare for publication the annual report, the same to contain the exact proceedings of the Society, and such other matter as shall be deemed proper by the Secretary, in conjunction with an advisory committee from the Executive Board.

SECTION IV.—TREASURER.

With the Treasurer shall be deposited all of the funds of the Society, and it shall be his duty to keep an accurate account of the income and disbursements of the Society, and shall be prepared to report the condition of the Society's finances, when called upon to do so by the Society or Executive Board.

SECTION V.—EXECUTIVE BOARD.

1. The Executive Board shall be the judicial body of the Society, and shall enact all laws, rules, and regulations for the government of the Association, shall have full charge of the annual exposition, and shall fix the salaries of the officers.

2. The Board shall have power to displace any officer for neglected duty or abuse of position, and shall fill all vacancies by appointment. This Board shall have four regular meetings during the year, the times and places for the same to be settled by themselves. Other meetings may be called by the President, or a majority of the members of the Board.

3. This body shall consider it their duty to look after the general welfare of the Society; devise new methods of improvement; keep the Society upon a sound financial basis, and provide for every necessity as it shall arise.

4. All measures of importance shall be submitted to this Board, but may be referred back to the Society for final decision.

5. The Executive Board shall make out a report through the Secretary for each meeting of the Society following the regular or special meetings of the Board.

6. The election of the Executive Board shall be arranged as follows: Two members shall be elected for one year, two members for two years, and two members for three years, at the next annual election; after which two members shall be elected annually, the term of office being three years.

SECTION VI.—MEETINGS.

The Society shall have four regular meetings in the year, to be denominated quarterly sessions, the times and places to be decided upon by the Executive Board, they being guided by invitations sent in from different portions of the State.

SECTION VII.—AMENDMENTS, ADDITIONS, ETC.

Any addition or revision of these laws may be made by a two-thirds vote of the members present at any regular meeting of the Society, one month's notice having been given.

SECTION VIII.

This Society in its regular or special meetings, shall be governed by ordinary parliamentary usages.

ANNUAL MEETING,

HELD AT COLDWATER, DECEMBER 6. 1876.

The annual meeting of the Society convened at Coldwater, holding the first session on Tuesday afternoon, of December 6th. The attendance was not large, but the members present represented all parts of the State, and several gentlemen from abroad favored the Society with their presence. The arranging and labeling of fruit occupied a portion of the afternoon, so that the meeting was not called to order until three o'clock.

President T. T. Lyon called to order, and as Secretary J. P. Thompson was absent on account of severe illness, Chas. W. Garfield was chosen to occupy his place *pro tem*.

The chair announced the committees for the session as follows:

Committee on Order of Exercises—Prof. A. J. Cook, E. Bidleman, and E. Bradfield.

Viewing Committee on Apples—George Elwanger, M. B. Bateham, and Prof. W. J. Beal.

Viewing Committee on Flowers—Wm. C. Barry, Mrs. S. S. Scovill, and Mrs. A. J. Cook.

Miscellaneous Committee—C. A. Ilgenfritz, H. G. Reynolds, and E. J. Shirtz.

Committee on Nomenclature—H. Dale Adams, C. N. Merriman, and Mr. Hanford.

The first named committee in a few moments reported an order of business for the afternoon; the first exercise of which was an address from Charles W. Garfield, of the State Agricultural College, upon

METHODS OF EXHIBITING FRUITS AND FLOWERS.

The object of our society enterprise primarily, is education in matters of horticulture. The quarterly sessions of its association, the annual exposition, and the publication of the report, are all methods inaugurated to further the object for which the Society was formed. Sometimes there is a temptation to look at matters of lesser import as main objects; for instance, in the case of the regular meetings, a large attendance, pleasing hospitality, and plenty to occupy the time during the session, are all placed oftentimes in the front so as to hide the great mark at which the Society aims.

The annual report of the Secretary, as representative of what the Society is accomplishing, is often looked upon as a work of 500 pages containing beauti-

ful illustrations, and a variety of matter upon popular topics. And again, the Annual Fair is a season for showing off,—a week of financial prosperity, a big show with lots of people to see it, and a fat society pocket-book, are all taken as the main objects in view, and when all these are consummated, we settle back in our society chairs with great satisfaction and say, “Haven’t we done wonders!”

It is to this last branch of our Society work I wish to call your attention. It has been suggested to me when I have advocated innovations in our system of exhibiting horticultural products so as to be more educational, that it was a good thing to have in view, but we must be seen and have a good show anyway or our bottom would tumble out.

I appreciate this necessity of looking sharply at our finances in order to secure a healthy longevity, and that we may command influence. But it seems to me that while seeking for the most knowledge we must employ the same means that will insure a good condition of finances:

1st. In both cases we must have a good show.

2d. We must secure such an arrangement that the entries shall stand out by themselves for comparison and appearance. This is necessary from either standpoint.

3d. There should be an intelligent, well-arranged plan, so that friction and confusion shall be avoided, so that he who comes to learn, equally with the one who comes to show, shall have ample opportunities without provocation.

It is easy to see when looking at the matter cautiously, that the most appropriate and satisfactory system that shall subserve a healthy financial condition, will also be just the one to secure the highest educational advancement. To be sure, there may be some difficulty in uniting upon a definition of a good show; and still when we look carefully upon the attributes of a good exhibition as viewed from the standpoint of all classes of observers, we find that there are a great many things in common. A very creditable show might be made of Baldwin apples alone, giving all the variations in form and color of this type. It would be beautiful, attractive, and withal a novelty; or we might make a show of monstrosities in the fruit line that would not lack novelty, and if not beautiful would attract notice. Or again, fruit might be arranged wholly with regard to color, taking no account of names, and be a wonderful triumph in its way. And still all of these would be very unsatisfactory exhibitions of a pomological association. Even the young man and maiden who pass through the hall hand in hand, thinking more of this last fact than of the fruit, would pass severe criticism upon it, and the student of pomology would find not even a crumb of satisfaction. The little girl when questioned as to the relative merits of her cat and doll and her opinion of them, invariably gives the preference to the cat because there is life in it. The doll may be never so beautiful, and the cat never so plain, yet the principle of life takes the preference. So in an exhibition it is not color and form that have the greatest attraction for any one, it is these attributes simply as connected with some system or plan indicating mind. The show is only really valuable as an exhibition of mind.

This much for generalities. When we come to make an exhibition in detail we may find many obstacles in the way of the consummation of our ideal, but they would be all dissipated at once if the matter of individual selfishness on the part of the exhibitors could be blotted out.

Now with the experience of past exhibitions let us take up the premium list,

not in a fault-finding mood, but with a desire to accord it with our ideal of what will lead to a satisfactory exhibit.

First the fruits. We open to collections. They are not only desirable, but a necessity, and give character to the general exhibit. The collections from divers parts of the State gives us pretty correct ideas of the fruits that succeed best in particular localities. The matter of collecting them acquaints people with the varieties they have, and the exhibit, if well put up, is beautiful to any observer, and if well labeled a text-book for the student. It is a fit and unobjectionable advertisement for localities, and premiums bestowed upon them have a good effect in stimulating exertion. A locality once placed in the front never wishes to give up to another, and thus it reacts upon the society that awards the premium by securing in advance the evidence of future successful exhibitions.

But what constitutes a good collection from a locality? Shall it be quantity of fruit shown? You all say no, for any county can send in a generous supply of any one sort that shall be valuable until no ordinary building will hold the exhibits. Shall the number of varieties be the criterion upon which judgment is based? I think again you will agree with me that a very inferior collection may be brought together in wonderful variety, and further, that it is no credit to any locality to raise the largest variety of apples, pears, plums, peaches, or grapes. Still shall we throw out the matter of numbers entirely? By no means, for it is a credit to any township or county to raise in variety the valuable fruits. What we desire from any section is the best fruit that grows there, and the typical specimens of each variety. For instance, if one collection contains 100 sorts, a majority of which are inferior, and another contains 75, in which every specimen is well formed and colored, the premium should go unquestionably to the latter. So in establishing an ideal of a sectional collection. The number of varieties are to be taken into account, but judgment modified largely by the character of the varieties and the appearance of the specimens. And the same thought should apply to individual collections, only emphasized, because our Society would do ill if by its premiums it should induce men to increase their varieties regardless of quality or profit. For this reason, if no other, I should make the announcement at the head of this class, that the collection shall not exceed forty or fifty varieties, in the case of apples, at least.

But you may well ask, if we look at the matter from an educational position, where are we to find the place to study all the new varieties, the unpopular sorts, for it is necessary that, as students of Pomology, we should get at and know these? My answer to this may not please you, but it is simply an opinion; take it for what it is worth.

I would have a separate class for entries of varieties without number. Of course, this matter applies with greatest force as regards the show of apples, and I make my opinion specific. Division E, class 1 of the premium list reads:

CLASS 1. Best collection of apples grown by exhibitor, nomenclature, quality, and succession to be the main considerations.....	\$10 00
Second premium.....	5 00
Third premium.....	3 00

I would change the reading of this so as to read largest collection of apples collected by one person—nomenclature, beauty of specimens, and number of sorts to be the main considerations.

It is a stigma upon the good sense of any pomologist who is in the business that he has the largest variety of apples of any man in the State. But as a

matter of education it is a good thing to have collections that are well named exhibited that shall contain nearly all the sorts grown in the State, and let the prize be the stimulant to the collector and the reward for his efforts.

By doing this we secure a double result. A magnificent exhibit of varieties for appearance sake, and valuable collections in which to study Pomology, as it can be pursued no where else. Two things of primary importance in connection with this class should be borne in mind—first, the beauty of arrangement; second, the distinct and correct labeling of each sort.

In the arrangement of individual plates of fruit the society made a great stride at the last exhibition. There was a better opportunity than ever before for the comparison of the same fruit grown in different localities, to note the difference of color, markings, shape, etc. Here was the place to study types, and one could get at a distinct impression of any variety from seeing together its variations. Some have already suggested that the premium in this class be made more general, to include a larger number of varieties. To this I would put in a disclaimer. Perhaps the sorts upon the list are not all among the best grown in the State, and if not, substitutions should be made; but my idea of this class is that it shall contain the best varieties only, and if the inferior ones are to be viewed let them be sought in the collection making large variety a leading feature.

Before leaving the fruits I desire to say a few words upon placards, signs and labels. The real value of knowledge gained at fairs depends upon its exactness; and from hearsay, or an answer to inquiries we are very apt to be misled. Again in the acquirement of information we do not wish to waste time. For this reason it is of the highest importance that, as far as possible, every department, and individual exhibit be appropriately, distinctly, and accurately labeled. It is like an index to a book. We are getting to value a book almost doubly if it is carefully indexed so that in a moment we can turn to anything in the volume. Hence I would begin at each entrance to Pomological hall and in every instance I would have the name of the hall larger than the advertisement of yeast cakes, soaps, or stove polish.

Each division and collection should be definitely announced in clear type. The old idea that every bit of public information must be kept from viewing committees is simply a matter of history. We select committee-men, of supposed integrity, and trust them. It is our duty to give the public, who come to see, all the information and pleasure we can. How can we do it better than with clear, neat labels. I believe in this one thing we lack more than any other. It may be said that individuals and counties should exhibit their own placards. But the better plan is for the society to be responsible for them—then they will be all in character, and we can readily throw out any forbidding cards of men who come just to advertise their wares.

FLORAL DEPARTMENT.

The State Pomological Society has gradually been developing a floral department, and it has been a step in the right direction. But any one who will compare our premium list with others from localities where plants and flowers have been given large attention will perceive at once that there is grand opportunity for our growth in this direction, and we must make no inconsiderable advancement to be even with the best of them. In truth our exhibits have shown this. There has not been definite lines of division, and premiums have been awarded to largest exhibits, a good deal regardless of intrinsic merit.

It is eventually desirable that our awards of premiums shall be so managed as to develop skill and taste in the growth of plants, in their arrangement, and especially in matters of floral ornamentation.

Well grown conservatory or house plants are the exceptions at our exhibitions, and it has been customary to hide deformities, by massing a mixed lot of greenhouse growth together. This plan is to be deprecated; and to avoid it I think of no method so good as that adopted by eastern floral fair associations, of limiting the number of specimens in collections, allowing no more than one plant of a kind in any entry.

There may be as much skill employed in the arrangement of the entry of a collection as possible, and I admit this may unwittingly influence a committee, still with a limited number of plants their defects will not be disguised by massing.

To speak more in detail let us again turn to the premium list of 1876. The first innovation we would suggest is to abandon the division of stove plants. With but two houses in the State arranged peculiarly for stove plants it seems folly to keep up this distinction.

But let there be in the first place a definite line drawn between professional and amateur florists, and under the professional list call the division "plants in pots." This will include greenhouse and stove plants, and the first class should be (to illustrate our limitation in number) best 20 greenhouse and stove plants of different varieties. Instead of saying best collection of variegated leaved plants, I would limit it to best collection not to exceed six specimens in this class.

To stimulate exertion in growing specimen plants by professional florists, I would have a general class indicated, as follows: Best specimen flowering plant of any species in flower.

The amateur list should vary somewhat, being confined principally to plants adapted to window culture.

FLORAL ORNAMENTS.

The division bedding plants and cut flowers should be open to all, and there should be a definite method of showing these. Our Society has not, as yet, exhibited any flowers in bottles, but there are many sorts that are displayed to a great deal better advantage in bottles than in sand, and it is not well to adopt one method to the exclusion of another.

Verbenas, gladioluses, heliotropes, carnations, and roses show better in bottles, while asters, zinnias, and dahlias are better shown on a bed of sand.

It requires two sorts of ability to grow good plants or flowers and to arrange them for exhibition, and for this reason cut flowers should always be separated from designs and arrangements. In the last class it is quite desirable that opportunity be given for development of new designs, and I would add a class entitled best floral novelty; and also the best and most tasteful arrangement of autumn leaves.

For the best display of cut flowers not to exceed 100 varieties, the preservation during entire exhibition to be considered, it seems to me there should be offered as many as four premiums. This is a department that needs stimulating. We want our people to raise more flowers,—not one kind, but many.

I would do away with the sweepstakes premiums, and put the money where it would bring out a better display of skill and taste. We need to exercise the same caution here as with apples. In a collection of apples we would account

it fraud to willfully place duplicates of fruit along occasionally, while in the display of plants the fact of showing twenty of the same variety has not been noticed or criticised. We are seeking advancement, and here is an opportunity for a good step. There is no reason why the Society may not do as well by floriculture as pomology, and lose nothing of enthusiasm thereby. The truth is it is like lighting one candle by another already burning—there is nothing lost to the giver, while the recipient simply is put in shape to develop and exhibit its own resources.

Mr. Lyon.—A remark or two in the address may have been pointed at me, because I have been an advocate of collections having a large number of varieties. I am still, and believe it is well for our Society to foster some plan by which people who attend our fairs may learn the names and characteristics of varieties, whether good, bad, or indifferent. To be sure there are comparatively few apples that are profitable for general market purposes, still there are a large number that are valuable on other accounts, and it is my impression now that some of our leading pomologists are confining their lists within rather meager limits.

H. G. Reynolds.—The leading thought in the address, that our expositions should aim more toward the education of the people, I most heartily endorse. And it seemed to me, as I listened, that the arrangement for the exhibition of apples in variety was amply provided for in the division, which admits of any number of varieties to be exhibited by a collector. The aim of our Society is education in matters pertaining to fruit and fruit culture, and I am an advocate of any plan which will best subserve the leading purpose.

Mr. C. N. Merriman.—We can not too strongly aver our purpose to teach the people in our Society work, and I for one find that at the annual fairs of our Society is the best opportunity to study the characters of fruits, and I believe there should be a definite line separating the collections for market purposes and those which are on exhibition simply to show a large number of sorts. We not only desire to know the most profitable apples and other fruits, but we want to learn to know the characteristics of all the prominent varieties, hence I am in favor of the changes suggested in the paper.

Mr. Wm. Rowe.—The portion of the address that interested me the most was that relating to flowers. The growing interest manifested in our floral department indicates to us that we must do more exact and definite work in this direction. Surely it is not enough that we have a mass of plants and flowers, without any decided merit, but we should by our divisions, teach people to do work well, whether it be in the growing of a plant, the arrangement of a set of plants, or the putting together of a bouquet; and I am decidedly in favor of some plan by which the amateur and professional florists shall not compete together in the same classes. While we desire to have professional growers that are excellent in their way, we do not wish to discourage the exhibitions of our amateurs by making them compete with those who have so much greater advantages.

Prof. Beal.—That is a good point made, and I want to add a word more to what has already been said. Next September I hope to be able to be at the fair, and for the single purpose of studying specimens, and it will be a matter of great importance to me to have everything distinctly labeled. We each year notice in the reports of the fair a large number of errors by reporters. They are not always in blame. They get their information as best they can, and are often misinformed. Every collection and sort should be clearly defined

in its limits and distinctly labeled so that all may read and get correct information as they proceed, without being dependent on answers to questions.

Mr. Stearns.—There is much need of a change in the usual mode of offering premiums for collections of fruit. The first great object of fairs is to educate the people, and they do this to a greater extent than the majority are aware. No one realizes this more than the nurseryman. If this be true, it is of the utmost importance that the means used should be in the right direction. I have always contended it was wrong to make our premium list read, best and *greatest* collection. In my opinion, it should be *best* collection. I was more than ever convinced of this in our last fall exhibition. I know it is urged by officers of societies, in their anxiety to make that part of the exhibition a success, that it is necessary to fill the shelves. This is an error, as I know from three years' experience.

All that saw the show of fruit at our Kalamazoo County Fair, and also that at the State Fair for the two years past pronounced ours much the finest collection, and we filled the hall built to accommodate the State Society, and the premiums were offered for the best collections. Committees were instructed to award on best collections regardless of number of varieties.

To illustrate that the show will be larger as well as better by this mode of offering premiums, A, B, C, and others, have fine orchards of choice fruits, cared for in all respects, of all the *worthy* varieties, but perhaps not more than twenty or thirty varieties; but D has an orchard of one hundred or one hundred and fifty varieties, of no account but to make a wide spread at the fairs, and A, B, C, and others, say it is of no use for us to compete, as D has so many more varieties. Thus, it will be seen, many of those able to make the best show are kept from competing, and it is left to a few that are able to make a collection of many varieties to fill our shelves, instead of bringing a great number of competitors, and thereby proportional interest in the exhibition. What is the result? People thinking of planting fruit look over the shelves (not acquainted with names and varieties), are attracted by plates of large, or, perhaps, handsome looking fruit, they look to see the name, take out pencil and note-book and take down names, go to the nursery or give orders to an agent, want such and such varieties, cabashea (New York pippin, so-called), etc., etc. Are they rightly educated?

I saw apples of many varieties that looked well on the plates at our State Fair at Jackson that I would venture to say, if they were picked from trees that would yield twenty bushels, it was a difficult matter to get the five specimens of fair fruit on the whole tree. Is this educating the people in the right direction? I hope these points will be considered by the Board in making the premium list in future.

This discussion closed the afternoon session.

Tuesday Evening.

The first address of the evening was the welcoming speech of Mayor Cutter, as follows:

Mr. President, Ladies and Gentlemen:

I understand the object and aim of the Society, in the meeting of which our city to-day is honored, are, to develop facts and promulgate information in the cultivation of all kinds of fruit; in horticulture, floriculture, and arboriculture.

The importance and usefulness of such an organization can be well seen when we recognize that its work may extend to every home in the State, and may largely affect the pecuniary gain of every family; and in so far as it leads to a better knowledge of the true, the good, and the beautiful, it may be a means of elevating the people physically, intellectually, and morally.

The products of the orchards and vineyards of our State have become a great source of profit: and owing to the favorable influence of location, climate, and soil, will, it is reasonably expected, in the near future, become *one* of the greatest sources, if not *the* greatest one of income in our commonwealth.

The products of the garden, whether from the large acreage of the professional horticulturists in our large cities and villages, or from the few rods of ground cultivated around nearly every home in the land, are sources of profit and comfort which have an important bearing upon the happiness and prosperity of the country.

The flowers and ornamental trees cultivated in the lawns, gardens, houses and conservatories, are elevating and purifying in their influence. Whatsoever makes home beautiful and attractive stimulates the higher faculties and has a tendency in the direction of purer thoughts, higher deeds, and nobler aspirations.

If that man who makes two blades of grass grow where one grew before should be esteemed a benefactor to his race, I am sure we should highly esteem and encourage an organization like yours, sir, which undertakes to enlighten the people in the direction in which it seems to me they so much need; and which, if its teachings were followed, I have no doubt, would make a large percentage of the homes in our State much more attractive,—teachings that would make our gardens “blossom like the rose,”—that would make our fruit-bearing trees and shrubs things of beauty as well as profit,—that would supplant the weed, the catnip, motherwort, and burdock, *et hoc genus omne*, with the hop-vine made gracefully ornamental,—with the grape loaded with its luscious purple fruit, and all those cultivated products of use and beauty which cluster around a well regulated home.

Whether as a cause or sequence this is true: The higher the civilization, and the more advanced in culture and refinement the nation or country is, the greater will be the attention and the higher will be the perfection in horticultural pursuits; and I have heard that an eminent jurist has said, that inebriety and criminality were very rare among those who have made the culture of fruits and flowers an occupation.

Although this portion of the State is not favored with being directly in the fruit belt that fringes the great lakes, which, like huge furnaces, radiate their warmth when the west wind and the north wind bear on their wings the chilling and deadening frosts of winter; yet the products of our orchards and gardens, notwithstanding, are a very important element of our prosperity. It has been estimated that the apples alone shipped from this county in 1875 amounted to over \$100,000.

Mr. President, I can assure you and the members of this Society that the citizens of this place and vicinity will take a deep and lively interest in your deliberations: and that they will extend to you a cordial hospitality, and will be pleased to make your stay here as pleasant and profitable as possible,—by aiding you in the business of your meeting, and by showing you whatever we have that may be your pleasure to see.

President Lyon replied in some well chosen remarks. Among other things

he said that our Society was the outgrowth of a necessity. Michigan's fruit interests were demanding that there be united effort in ascertaining the best methods and varieties. It holds its sessions in various parts of the State, not alone to impart information and enthusiasm, but to receive knowledge into the general fund to be in turn given to others. Thus there is mutual assistance rendered. He said that statistics would bear him out in the assertion that in no State does fruit bear so prominent a place in relation to general agriculture as in Michigan. A few years ago he sent some specimens of apples to Chas. Downing from our State fair, and received the reply that the fruit was beautiful, but he wished people would not persist in sending him the largest specimens they could find, and when assured that those sent to him were simply average samples taken from the plates at the fair, he replied, "Then Michigan should have one-third of her area planted to fruit."

These introductory speeches were followed by an address by Prof. W. J. Beal upon the

CLASSIFICATION OF APPLES.

Many attempts have been made to classify fruits, but a perfect classification which will satisfy every man can never be made, for no two will agree on the relative importance of the characters used in description. A natural classification would be one in which every distinguishing feature of the plant was duly considered, giving each character its due weight. This would include the peculiar features of the young embryo as it began to germinate, following on with every step in its growth to a mature old plant bearing fruit. A natural classification of apples, or the plant bearing apples, would give due prominence to the mode of growth of the shoots, rapidity of growth, color of shoots; the shape, size, color, or other peculiarities of the buds; the position taken by each leaf, its shape, size and color, in regard to general outline in the minutest details; the shape, color, relative size and other features of all the parts of the flower; all the details of the peculiarities in the fruit and seed; the tender flavor and quality of the fruit; its keeping qualities, etc. In a natural classification nothing must escape notice, every point must have its due weight in determining the relations of each variety to all the others.

An artificial classification is based on some one of a few points of difference, ignoring other points which may be of much importance. As an example, if we divide all apples into two classes, one sweet, the other sour, we divide them artificially, with reference to one character alone, ignoring everything else, as size, color, keeping qualities, flavor, peculiarities of tree, bud, leaf, flower, seed, etc., etc.

Every attempt at classifying apples by the fruit alone will be an artificial one. For practical purposes a classification is of little use to most men, except to enable them to find the correct name of an unknown apple. The easiest key to aid in this kind of identification is so constructed that the learner has only to decide between two or three points of difference at a time. The first step taken, two additional points are presented for decision, and so on to the end of the description.

Dr. Warder, in his "American Pomology," gives, on page 369, Diel's classification, in which, I judge, he has attempted a natural classification of apples. Class second he calls "Rose apples," and enumerates nine peculiarities of the class, viz.:

- "1. They are covered with blue bloom when on the tree.
- "2. They have unproportionately large, but often only regular cells.
- "3. They emit a pleasant odor when briskly rubbed.
- "4. The skin does not feel unctuous.
- "5. They are handsomely and regularly ribbed round the eye, and also over the fruit.
- "6. They have tender, loose, spongy, and mostly fine-grained flesh.
- "7. They have a fine rose, fennel, or anise flavor.
- "8. They are mostly of short duration, and are often only summer or autumn apples.
- "9. They are mostly striped like a turnip."

In the above illustration, the searcher for knowledge must have in mind all these nine points at one time. This may do for the studious Germans, who have lots of patience and time enough, but for more impatient, hurrying Yankees the system is of no value.

We want a work describing fruit, to use in finding out the name of something new or unknown to us. A book which is convenient for this purpose will be of much greater value than one in which the names and descriptions come in alphabetical order with no attempt at classification. If you know the name of an apple you can find its description in such a work as that of Downing or manual of Robert Hogg. If you do not know a fruit and have skill and patience you may find the name of an apple unknown to you by the use of Warder's American Pomology, or Thomas' American Fruit Culturist, if the fruit is included in these works. Downing's last edition describes over 1850 varieties of apples. No one would ever think of trying to hunt up an unknown apple in such a long list without some classification.

A. J. Downing believed the classification of apples to be impracticable. On this subject he writes: "The distinctive characters of fruit have, for the past quarter of a century, become so much intermingled and hybridized that, after studying them and comparing them with the orders of classification adopted by authors we have come to the conclusion that no definite order can safely be made to embrace them. Forms, colors, growths, and periods of ripening are so much interwoven and distributed as to defy all arbitrary rules of classification, and hence we have without hesitation abandoned it entirely, substituting in our work the simple order of the alphabet as confined to names, believing that such course will prove the most available and useful."

We are not satisfied with this. Because the botanist is puzzled to mark out the boundary lines and define asters, and sedges, and mosses, and many fungi, he does not think of giving up all attempts at classification. The same is true of the zoölogist, whether he is studying mammals, birds, fishes, insects, worms, or corals, or any other class or order of animals.

No one who has ever attempted to describe fruits has failed to notice the great variation in color, size, flavor, and sometimes even when grown on the same tree, yet no author has given up entirely the possibility of describing every fruit. I believe that whatever may be described may be classified. In our descriptions we must make allowance for a doubtful form to appear in two different places in our list or artificial key. For instance, if some apple is not decidedly sweet or sour, but has a flavor which may be mistaken, construct the list so as to include the apple in both lists as to flavor, and rely upon other points to determine its true place in the list. So with other points which are likely to be misunderstood as to size, shape, time of maturing, etc. Botanists arrange their keys in this way and no inexperienced person may pass over a plant or get into the wrong order in looking for it.

Our best artificial keys in botany and zoölogy require the student to decide only one or a few points at a time, for example, is our plant under consideration exogenous or endogenous? This once decided, perhaps he may next decide whether the plant has its petals distinct from each other, or united, or have none at all, and so on one step at a time till the plant is traced to its true position.

In a similar manner, I have made an imperfect or preliminary attempt to classify our apples. I wanted to make a key which would do to use in connection with the large work of Downing. I must give this up, to some extent at any rate, on account of the very meager and incomplete description of many varieties. For examples, I quote his descriptions of the apple *Augustine* as "large, roundish conic, yellow striped with red, sweet and dry. August." The *Autumn Golden Pippin*: "Tree vigorous; fruit small, lemon-yellow, little russeted; flesh rich and delicious flavor." *Belzer*: "Fruit medium, roundish, yellow striped with red; flesh white, fine sub-acid, good; middle of August." *Bird's Favorite*: "Fruit medium, roundish, greenish yellow; flesh firm, white; November; hardly good." *Bushwhacker*: "Fruit large, roundish conical, yellow; good; February to May. Found near Newark, N. J."

I might quote many more, but it is unnecessary. The novice, with such descriptions, can make almost anything he has a mind to out of an unknown fruit, especially after wading through 50 or 60 descriptions to find the right one.

As previously remarked, no two authors would agree as to the exact or relative importance of any two characters. For example, Dr. Warder, after giving much study to the subject, makes four classes, based upon the outline of a vertical section of the apple,—as flat, conical, round, oblong. Each of these he divides into orders, based upon the outline of a cross section of the apple,—as regular and irregular. I think he has placed much too great value upon the cross section, and too little upon the taste, as sweet or sour; also too little importance upon the color of the surface, as to whether it is striped or not striped with red.

In a complete description of an apple, now that the list is so long, I think we should include a good account of the tree,—its shape mode of growth, particulars of the structure of the leaf, the flowers, seeds, core, etc. But for my present purpose I have attempted to make a key based upon the well known characters of the mature fruit alone.

After studying an apple, or taking it in hand, we will first decide whether it is sweet or sour; second, is it ripe in summer, autumn, or winter; third, is it striped with red, not striped nor russet, or russet; fourth, is it flat, round, conical, or oblong? These four features can be expressed in a key on two pages of a book facing each other. At the end of each line I give the page to turn to in the next part of the key.

The fifth thing to be decided is, is the apple large, medium, or small; sixth, is the skin marked with dots or specks, or no dots; seventh, is the basin deep or shallow; eighth, is the basin even or ribbed; ninth, is the eye open or closed; tenth, is the eye large or small; eleventh, is the cavity broad or narrow; twelfth, is the cavity regular or irregular; thirteenth, is the stem long or short?

Each of the above terms is defined in the works of Thomas, Warder, or Downing.

The above is by no means an exhaustive enumeration of the distinctive features of apples. I should use them all if I could have all the fruits for examination. This I have despaired of ever doing. I must, as others have done, take the descriptions of other men. These, in many cases, make no mention of the points I wish to know. For example, in very many there is no mention made as to whether a certain apple has any dots or specks on its surface, or nothing is said of the shape, or size, or number of seeds, or the shape of the core, or cells containing the seed. I started off with divisions, making use of the characters in the order above mentioned, but I soon found I could not use them all, or need not use them all in many cases, nor always in the order above stated. On comparing two or more apples, or groups of apples, I make use of just these points, which seem to me most characteristic. In some it may be the basin: in some this may not be a good character. In others the most prominent point of difference between two apples may be the size. If the size be nearly equal, it may be the shape, or color of skin or flesh. So I seize whatever is the most striking point of contrast between any two apples or lot of apples in hand.

ARTIFICIAL KEY TO SWEET APPLES,

referring to page in 'Thomas' American Fruit Culturist where each is described :

SWEET APPLES.

	PAGE.
SUMMER—	
<i>Striped with red.</i>	
<i>Not striped nor russet.</i>	Foster, 189
Large, flattened slightly, flesh yellow,	*Golden Sweet 189
Conical, ovate, flesh white,	Sweet Bough, 190
Medium, cavity acuminate, basin moderate,	Golden Sweet, 189
Cavity shallow, basin shallow,	Manomet, 189
Small,	Hightop Sweet, 189
AUTUMN—	
<i>Striped with red.</i>	
Large,	Richmond, 197
Medium,	Jersey Sweet, 197
<i>Not striped nor russet.</i>	
Flat,	
Large, rich yellow,	Autumn Swaar, 198
Greenish, brown cheek,	Haskell Sweet, 198
Medium, stem short, skin smooth,	Munson Sweet, 198
Stem long, russet network,	Tift's Sweet, 198
Round and large,	
Ribbed, flesh white,	Lyman's Pumpkin Sweet, 198
Not ribbed, russeted, basin small,	Pumpkin Russet, 198
Pale green, basin large,	Summer Sweet Paradise, 198
Conical, medium, angular,	Autumn Sweet Bough, 198
<i>Russeted,</i>	Pumpkin Russet, 198

* There may be some doubt as to whether to call Golden Sweet large or medium in size, so I have included the apple under both headings, large and medium. It will also be observed that I have applied different characters to the Golden Sweet to contrast it with two different apples.

WINTER—

Striped with red.

Round,

Large,

Cavity large or deep,

Stem short,

Stem long, calyx closed, dots numerous,

Calyx closed, large, dots minute,

Cavity small, calyx large,

Calyx small,

Flesh coarse, yellow,

Medium,

Stem long, basin deep,

Basin small, calyx large,

Calyx small,

Stem short, calyx and cavity small,

Calyx large,

Oblong,

Large, regular,

Medium, irregular,

Not striped nor russeted.

Flat, greenish yellow and dull red,

Pale yellow,

Round,

Large, flesh yellow

Flesh white,

Stem long, skin yellow, eye small,

Skin green, eye large,

Stem short, core round, closed,

Core large, open,

Medium,

Flesh yellow, eye open,

Eye closed,

Flesh white,

Stem long, skin yellow, eye small,

Skin green, eye large,

Stem short, basin deep,

Basin shallow,

Oblong,

Maverack's Sweet, 209

Phillips' Sweet, 210

Bentley's Sweet, 209

Hartford Sweet, 209

Bailey's Sweet, 209

Hockett's Sweet, 209

Phillips' Sweet, 210

Wing Sweeting, 211

Sweet Pearmain, 210

Ladies' Sweet, 209

Sweet Romanite, 210

Ramsdell's Sweet, 210

Sweet Vandevere, 210

Leicester's Sweet, 211

London Sweet, 211

Danvers Winter Sweet, 211

Talman Sweet, 212

Green Sweet, 211

Broadwell, 211

Winter Sweet Paradise, 212

Camak's Sweet, 211

Danvers Winter Sweet, 211

Danvers Winter Sweet, 212

Green Sweet, 211

Higby's Sweet, 211

Wells' Sweet, 212

Honey Greening, 211

As a matter of record and convenience, I have begun to describe our apples by their flowers. This should be added to any previous description to make it complete. The increasing numbers of our apples make it necessary to employ all the good characters possible. The value of the flowers as a means of describing apples was pointed out two years ago at the Adrian meeting. Please bear in mind that the above key to the description of our apples is only a partial one. Though complete in regard to sweet apples in Thomas' work, as far as it goes, yet it will be of little value until all the apples are placed in a similar key, and the key printed for use. If time and strength can be spared, such a work will be completed at no distant day. Since writing the above I have seen a new classification of apples, proposed by Robert Hogg, in the Gardener's Chronicle of March 18, 1876, page 362.

Dr. Hogg says he has thoroughly tested the value and permanence of the characters upon which his classification is based, by the examination of fruits from different parts of the country, from different soils and climates, and also at different seasons of the year. He adds, "I must remark, however, that in this, as in every other classification of natural objects, the characters are not always constant, and there are varieties which refuse to submit to any scheme of man's devising. Nature refuses to be bound, and we must adapt our ideas to her laws. In every system it is so, as the botanist well knows.

“There are those in which some varieties have the eye open or partially closed, seed cells of the same character, calyx-tubes in which it is difficult to determine whether they are conical or funnel-shaped, and stamens which waver between a marginal and median position, or a median and a basal. But these are difficulties which are easily got over, as I shall show further on.

“The characters which I have adopted as the basis of this classification are the *eye*, the *seed cells*, the *calyx-tube*, and the *stamens*. These supply the primary and most important divisions: but they may be extended and broken up into fruit round, roundish, or oblate, and fruit conical, oblong, or ovate, and these for convenience may be farther divided into pale, colored, and russet.”

I abridge from Dr. Hogg's account as follows:

The eye is wide open, with segments of the calyx reflexed or erect, or the eye is closed with the segments of the calyx erect, forming a cone, or in some cases the tips are spreading; or the eye is closed by the segments lying quite flat and closing in the eye like a trap-door.

The seed cells are also called the core of the apple. They are either open to the axis or closed; and between these two forms there are all gradations.

The calyx-tube. In making a longitudinal section of an apple through the center, there is seen a cavity under the segments of the eye, and between them and the core. This is called the calyx-tube. It varies in form from conical to funnel-shaped.

The stamens form a bristle-like fringe round the inner surface of the calyx tube. The stamens are not always in the same position. Some form a fringe immediately under the base of the segments and are called marginal, others are median, others situated near the base are termed basal.

I can testify to the great value of the characters adopted by Dr. Hogg, but some of them, as the position of the stamens and shape of the calyx will not be likely to be understood by any but the student or botanist. Our people will object to them because they are not popular and easy to understand. But as our people learn more botany and science, as they must in a little time, they can all learn to understand these valuable characters. I find that Dr. Hogg has printed in advance of me what I think a good idea, viz.: To provide for cases which are intermediate or sometimes variable from one extreme to the other. He places such varieties in two places in the key.

Although this is called a new classification, it is based upon well known characters, which are mentioned or used in other works on Pomology. The least known and least frequently used are the position of the stamens and the shape of the calyx tube. In constructing my key to the description of apples I shall make free use of the good points indicated by Dr. Hogg.

Following Prof. Beal's paper there was a beautiful piece of music rendered by the Glee club, which opened the way for an address from President Lyon, which he gave in the form of a report, as chairman of the committee who had charge of forwarding fruit to Philadelphia.

POMOLOGY AT THE CENTENNIAL.

In undertaking to give some idea of the grand display of northern pomological products as they appeared during the time especially designated for their exhibition at the Centennial, it seems hardly necessary that we should go more than very casually over the general ground so fully occupied by the published letters of visitors and reporters for the press.

If either agriculture or horticulture can be properly said to have had a place in the original programme of the exposition, it is certainly true that their importance relatively to other interests was, at the first, greatly underrated by the projectors. That such was the fact was abundantly evinced by the circumstance that when the plans for the buildings had been adopted, and they were well advanced toward completion, agricultural hall was found totally inadequate to the wants of the department, and to supply the lack the commissioners were compelled to greatly increase its capacity, and even after this had been done it was found necessary to provide as many as four subsidiary buildings, viz., the American Dairymen's exhibit of farm products, the farm wagon building, the pomological building, and the brewers' building, besides which many States made extensive agricultural and horticultural displays in buildings provided by themselves. It is certainly true that this exposition in many of its departments greatly outgrew the calculations of its managers, but it is nevertheless true that this deficiency is more observable in the agricultural department than in most others.

In such original programme horticulture seems to have had no part, except as a merely incidental subdivision of the agricultural department. Not till the questions of laying out and beautifying the grounds came to be considered, did there appear to be in the minds of the commissioners adequate conception of the importance of this specialty as a means of adding to the attractiveness of the exhibition; and not until then was the horticultural taste and talent of the country invited to a representation in the councils of the management.

One of the first bodies called upon to provide for this emergency was the Pennsylvania Horticultural Society, which promptly and earnestly responded to the call, giving the benefits of the wide experience of its members and the prestige of its position as one of the oldest and wealthiest societies on the continent, to the development of this department and the dissemination of a wider interest in this branch of the enterprise. To this society, as we understand, is due the organization and development of the plan for the beautiful hall of horticulture, and its tasteful elegant surroundings; the development of such surroundings having been secured by inviting the coöperation of a large number of the leading horticultural establishments of this country to whom plats of ground were assigned, to be planted and cared for by them as an advertisement of their business, subject of course to such restriction as must be requisite to secure the needful harmony and appositeness of the various plantations. Even from Europe imported contributions were supplied to add to the interest of this exhibit, of which, one especially,—the Rhododendron collection of Mr. Watterer, of England,—is reported to have been one of the most notable and interesting objects of its class during the season of bloom. One of the most beautiful views upon the entire grounds was that from the front of horticultural hall; or perhaps we should rather say from the galleries above, from which could be had a bird's-eye view of several acres of ornamental grounds, included within a network of fully three miles of walks and drives, giving access to all its parts, and supplying the finest possible opportunity to study the peculiarities of almost the entire flora of our country, both indigenous and exotic; or, at least, that of the nurseries and green-houses of the country, in one or another of which we are quite sure to find stored up nearly or quite everything of this character that has been found susceptible of being appropriated to ornamental purposes.

It is to be regretted that while the ample space included in horticultural hall contained many interesting specimens of rare exotic plants, some of them of

great age and size, and of great value to the student of exotics, there was so little space devoted to the display of model plants of the classes more generally interesting to a large class of flower-loving people, and calculated to make them acquainted, not only with the varieties of plants best adapted to this purpose, but especially with the varied forms into which they are susceptible of being wrought under the deft fingers of the practical culturist.

The Creator has inseparably associated the flower with the fruit, by combining the offices of both in the perpetuation of the kind through the production of the seed. Not so much with man in general, and certainly not so with the Centennial commission. Justice also compels us to add, not so with our State Agricultural Society at its annual fairs; and we may also add, not so even with our State Pomological Society; else why is it *Pomological*, merely, instead of *Horticultural*?

Pomology, in common with Horticulture, seems to have been overlooked in the original programme of the Exposition, and no provision was made for its especial wants in the agricultural departments, of which it was held to be an adjunct, till a comparatively late period, when an "annex,"—a simple pen with a roof to shelter the table,—was constructed adjacent to agricultural hall: in which was displayed the fruits alone, disassociated from everything calculated, by adventitious attractiveness to invite, and thus educate other than fruit fanciers by supplying additional motives for a visit to the "annex."

We regret to be compelled to remark that if we except some of our leading Horticultural societies (and to some extent possibly even by them), there seems to have been a partial forgetfulness of the fact that the great object for which such public exhibits should be held must be, so far as the public are concerned, largely an educational one; and hence that the study should be to attract the crowd—with the hope of begetting interest on the part of those who may need other motives to call their attention to a display of this character. The central position of the beautiful hall of Horticulture, with its admirable surroundings, not for this reason only, but also on account of the very natural associations between the two, would have rendered this a most appropriate spot to be constituted the headquarters also of Pomology; by either providing space under the roof of the main Horticultural Hall, or an annex, if found more convenient or desirable, instead of making it an adjunct of Agricultural Hall, and locating it in an out-of-the-way place where many would fail to visit it from mere lack of interest necessary to learn its real location.

The true pomologist is not merely a lover of fruit; and few persons will be found, worthy of the name, who are not lovers of trees and plants as well. Besides the student of Pomology, if he would be really successful, will find the necessity imposed upon him of becoming a student also of the peculiarities of growth in inflorescence as well as of fructification—a fact that points strongly to the propriety, not to say necessity, of keeping up an association between the two.

With a judicious association of the exhibits of Pomology and Horticulture, it will be difficult to overestimate the importance of the lessons that would, by these means, have been impressed upon the minds of many who greatly need to profit by wisdom of this character; but who, like too many who are working in the dark in the broad field of botanical reproduction, for lack of a discriminating knowledge of the great principles upon which nature conducts such operations, seem, to a great extent, to be wasting their energies in unproductive operations.

The general management of the Pomological exhibit was very appropriately tendered to the American Pomological Society, and such tender was accepted by the Society at the Chicago meeting in the fall of 1875, but for some unexplained reason—possibly the ill health of the venerable President, Marshall P. Wilder, of Boston,—nothing seems to have come of such acceptance.

Up to the time of the grand exhibition of Northern pomological products which was assigned to the second week in September, little use seems to have been made of the Pomological Annex: as all the earlier displays of fruits had been of comparatively limited extent and had been accommodated with sufficient space, fitted up with tables, in the broad aisles of Agricultural Hall. But about this time, cooler weather and the approaching termination of the exhibition, seem to have inaugurated an increased rush of visitors, such as kept this hall, as well as all others, so thronged that the entire space was not too great for their accommodation; besides which, the immense extent of this avalanche of fruit entirely transcended the capacities of so limited a space, and compelled its removal to the Annex, which, during the week, was filled to the extent of its capacity.

This Annex is a plain, square building filled with tables arranged with three stays on each side,—an arrangement which, to some extent, facilitates the labors of the judges, although with the visitor it interferes with any such thing as a general view of the exhibit.

Commencing at the northerly end of the building, we come first, to a very extensive display of fruits from the Dominion of Ontario, embracing a large number of individual contributions from a wide range of country. The bulk of the exhibit, of course, was apples; many of the varieties very finely grown. We were especially attracted by the large size and rich color of the Alexander, showing it to be finely adapted to this northern region. Three of Arnold's Hybrid apples, small in size, but of fine flavor, appeared in a collection from the grounds of that noted and successful experimenter.

We were also interested in a set of thirty-one foreign apples, imported, fruited, and exhibited by our friend Jas. Dougall, of Windsor, opposite Detroit. Among them we noted the rare and beautiful *Api Noir* (Black Lady), the counterpart of our beautiful little Lady Apple.

This Dominion exhibit, also included a very considerable display of grapes and pears, some of them very well grown, especially if we consider the high northern region in which they were grown. Our remarks, however, only apply to the September display, since which we are informed this exhibit has been very considerably increased from later shipments, collected when the fruits had more fully matured and therefore, doubtless, larger in size and more fully colored.

The State of New York seems to have made no effort to draw out an exhibit of its fruits, as almost the only collection shown from that State was that of the nursery establishment of Ellwanger & Barry, who displayed a collection of one hundred and fifty-eight varieties of apples, and also a very extensive collection of pears, embracing most of the staple sorts as well as many new and rare ones, some of them of fine size and appearance, although they were said to be sadly diminished from their usual size and appearance by a very severe drought during the past summer.

MASSACHUSETTS

seems to have been indebted to its time-honored Horticultural Society for an ex-

tensive display of fruits, in the collection of which it was aided by the Worcester County Horticultural Society as well as by a large number of individuals. The show of apples was very creditable and well worthy of the State from which they came. The collection of three hundred varieties of pears by Marshall P. Wilder, President of the American Pomological Society (who was unable, from sickness, to be present in person), and another very large collection by C. M. Hovey, of Cambridge, were especially noticeable.

CONNECTICUT

reported two hundred and fifty varieties of apples in her exhibits, although possibly there may have been some duplicates reckoned in the count: be this as it may, very few of the more popular and valuable varieties were omitted, and the collection, including pears and a few other fruits, must be considered to be very creditable to the State, especially when we consider the tendency to depreciation in old soils, and the probably increased liability to the depredations of insects in so long settled a region.

PENNSYLVANIA

displayed a rather diminutive collection during the height of the pomological display, but seems to have reserved her strength till "Pennsylvania Day," which, if we mistake not, occurred September 28th, when an exceedingly fine exhibit was placed upon the tables. Much of it was superior in size and appearance to that shown from the more easterly States.

MINNESOTA

exhibited a collection—mostly apples, and a very large proportion of them crabs. Of apples one hundred and nineteen varieties were shown, twenty-four of which were Siberian crabs. The specimens must of course have been gathered before full maturity, many of them giving indications of peculiar climatic influences. They nevertheless afforded very interesting illustrations of the capacity of varieties to adapt themselves to change of circumstances, while many of the sorts,—especially the crabs,—indicate the possibilities of new creations more fully adapted to the peculiarities of this northern locality.

INDIANA

contributed a very fine display, mainly of apples,—comprising one hundred and eighty-seven varieties, finely grown and of beautiful appearance, which attracted less attention than they would have commanded, for the reason that no one seemed to be at hand to give information respecting them, while the names of contributors, and even in many cases those of the varieties, were lacking.

THE WISCONSIN STATE HORTICULTURAL SOCIETY

displayed a beautiful collection of well-grown fruits,—mostly apples, and embracing an unusual number of the very early sorts yet in season in this northerly region, also several of the new "iron-clads" now being put forward as adapted for planting at the northwest. The display was an extensive and creditable one and attracted much attention.

THE OHIO HORTICULTURAL SOCIETY

placed on exhibition a very extensive collection—mostly of apples, drawn from portions of twenty-four counties of that State. When we consider the very general failure, this season, of the fruit crop of a large part of the State this

display must be conceded to have been an exceedingly beautiful one, and the specimens generally very creditable,—even for a favorable season.

IOWA,

with very creditable wisdom and forethought, provided an ample appropriation and placed it at the disposal of some of her most experienced pomologists, who were empowered and instructed to make thorough work of the matter, both by collecting the best specimens to be had and by securing all the facilities necessary for safe packing, shipment and handling at the Exhibition. Indeed, it was whispered that one of the leading objects sought in the display was to outdo the Michigan exhibit,—a very serious undertaking, one could imagine, when the disadvantages of their climate are taken into consideration. The display was mainly of apples, which certainly were, in most cases, exceedingly large and beautiful. The entire collection was said to comprise three hundred and forty-two varieties displayed upon one thousand five hundred and forty-one plates—not with merely three or five specimens to the plate, but generally heaped with all the dishes would hold. The specimens were generally perfect in form and beautifully waxen in appearance, which was doubtless due in part to an effort to catch the fancy of the inexperienced public, by resort to the polishing process,—a practice which every pomologist must deprecate. Whether this assumption be true or false, the great beauty of the specimens generally was a very noteworthy feature of the collection, as was also their unusually large size. This superiority, however, cannot be said to be altogether without drawbacks. Generally the specimens showed a lack of color as compared with the same varieties grown in more eastern localities. This might be attributed to premature gathering, and doubtless in many cases was so, but we did not fail to observe that this seemed nearly if not quite as true of the early sorts as of those not mature at the season of collecting. Coupled with this deficiency we could not fail to observe a very noticeable deficiency in flavor as compared with fruits of the same varieties grown at the east; although we may remark that these deficiencies of color and flavor seem to be even more marked in the fruits of Nebraska, and especially in those of Kansas and California.

This entire display was in charge of such careful and accurate pomologists as James Smith and Suel Foster of that State, by whom the naming and labeling were attended to in the most satisfactory manner.

THE NEBRASKA STATE HORTICULTURAL SOCIETY

exhibited a collection, principally of apples, embracing two hundred and sixty-three varieties of this fruit; which, except in number of varieties and in quantity shown, must be admitted to be fully the equal and in size possibly even the superior of that from Iowa, but with the same drawbacks noticed in connection with that, possibly in a somewhat increased degree. Both collections were desirable for their general freedom from insect markings and also from weather discolorations.

THE KANSAS STATE BOARD OF CENTENNIAL MANAGERS,

who were in charge of the entire exhibit from that State, had secured the privilege of retaining their fruit exhibit at the Kansas and Colorado State building. The display was confined almost entirely to apples, of which they exhibited ninety-six varieties. So far as size and freedom from imperfections generally are concerned, they must be admitted to have been fully equal—probably even.

superior,—to any other collection shown, the only drawbacks being those already named,—lack of color and flavor,—deficiencies, indeed, that seem nearly or quite inseparable from excessive size.

The Leavenworth County' Horticultural Society made a district display of two hundred varieties of apples in connection with the general exhibit, in the Pomological Annex, which must be said to have been fully as fine as that in the Kansas State building and possessing the same general characteristics.

MICHIGAN

entered under several serious difficulties in her endeavors to properly represent herself in the face of this competition. The meagre appropriation provided by the Legislature is understood to have become exhausted in collecting, transmitting and caring for the not very satisfactory display of the agricultural products of the State, which failed to meet the hopes and anticipations of our State Centennial Commissioners, mainly, as we infer, from the failure of the agriculturists of the State to rise to such conception of the immense advantages of an adequate display of the products of our soils, as should be needful to inspire them with the requisite energy and enthusiasm.

The unsatisfactory condition of this portion of our State exhibit seems to have turned the attention of our Commissioners, and especially of the Governor, to the fruit exhibit as the only remaining compensation for such failure: and he strongly and earnestly urged the gentlemen in charge of the collections to be sure that the success of the Chicago exhibition in 1875, and of our spring exhibit at Philadelphia in May last, should be fully sustained by this autumn collection. These earnest calls of the Governor and the Commission were seconded by their assurance that, notwithstanding the failure of the appropriation, the expense of forwarding these collections should "in some way" be paid. This assurance was the more needful for the reason that the Express Companies utterly refused to forward packages to Philadelphia, except upon pre-payment of the charges. This had the effect to drive these shipments largely into the hands of the through freight lines, and that, so far as we are able to judge, with a slight loss in time: but with very great advantage in safety and economy of transmission.

After careful consideration, it was decided to waive all attempt to exhibit the earlier and more perishable fruits, but to open our display with plums and early peaches, which were accordingly sent forward in their season in limited quantities: but it was not till early September that even these were adequately represented.

The second week in September was certain to prove too early for any except a few of our very early fruits, as it was foreseen that our late autumn and winter varieties would be but partially colored and very much lacking in size, as well as in general appearance.

Foreseeing this, it was determined to make but a partial display of our earlier fruits during the week assigned for that purpose, but to reserve our main effort till about the usual season for the gathering of our winter fruits. In the meantime Judge Ramsdell of Traverse City, represented his locality with plums, and Mr. H. E. Bidwell, of South Haven, forwarded some of the earlier varieties of peaches, while a few others forwarded some of the earlier apples, through H. Dale Adams, the collector of apples, and E. H. Reynolds, of Monroe, among which were a small but beautiful collection from the Peninsula Farmers' Club of Grand Traverse. At my suggestion, Mr. J. W. Humphrey sent a select col-

lection of summer and autumn apples from my original orchards in Plymouth, Wayne county, which arrived in season for exhibition during the week of the Pomological exhibit. These small collections of early apples with the remains of the plums and peaches spoken of, and during part of the week a large and fine collection of pears from I. E. Ilgenfritz and E. H. Reynolds of Monroe, with several fine dishes of the earlier grapes from E. Bradfield, of Ada, Kent county, constituted the Michigan exhibit for Pomological week, much of the space reserved for Michigan remaining unoccupied. To those who were not aware of the deferring of the main Michigan exhibit this circumstance was felt to be discouraging, and the feeling that we were being distanced in the contest, was quite freely expressed.

Such continued to be the position of affairs till late in the subsequent week, when the arrival of a new installment of our later peaches from Mr. Bidwell, together with a fine additional lot of pears from Mr. Ilgenfritz, with some exceedingly beautiful Bartletts and Flemish Beauties from Traverse, with plums from Judge Ramsdell, and a very fine collection of grapes from the same source, as well as others from Mr. Bradfield, including some of wonderfully large size which attracted much attention, began to put a more encouraging aspect upon our affairs. About this time also Mr. Samuel Hoppin of Van Buren county, arrived with the news that a large additional collection, including grapes, peaches, and apples, might be expected at once. These actually arrived on Thursday, and when they came to be opened and displayed, Michigan at once manifested a strong upward tendency, as the very large size of the specimens generally, together with the rich and beautiful coloring, attracted great attention and elicited many expressions of admiration. This last collection may be considered as the opening of the Michigan display, as it contained the first general collection of Michigan fruit that appeared upon the tables.

My own connection with the exhibition of fruits closed with the making up of the reports of fruits exhibited during Pomological week, and duties at home compelled me to forego a longer continuance at the exhibition. I therefore left soon after the arrival of the collection of Mr. Hoppin. I am hence obliged to give all subsequent information at second hand. My duties at Philadelphia detained me there till after the close of our State fair, but I am informed that the finest of that display was gathered up and forwarded to the Centennial, and that during the first week in October Mr. Adams collected and shipped an additional car load of our very finest fruit, fully matured in size, color and quality. This and the preceding shipment, judging by the reports that come to us since their arrival, must have placed the Michigan exhibit of fruits in a very creditable position as compared with any and all previous displays: although we are informed that several other States, as well as the Dominion of Ontario, maintained their collections by the shipment of fresh fruits, till nearly or quite the close of the exhibition.

Much credit is due to Mr. C. A. Ilgenfritz, of Monroe, who was in general charge of the Michigan Agricultural and Pomological exhibits, for the diligence, energy and taste displayed in the arrangement and management of these collections; and the State is under great obligations to Messrs. Chilson, Adams, Bidwell, I. E. Ilgenfritz, Edward Bradfield, and Judge Ramsdell for the efficient manner in which they discharged their arduous duties as collectors of fruit, while we escaped a similar obligation to Mr. A. O. Winchester of St. Joseph, as collector of small fruits, only for the reason that it was judged impracticable to secure a creditable exhibit of these, at so remote a point, on account of their very perishable character, together with the warmth of the season.

We have omitted to speak at length of the California exhibit of fruits, as they were shown as a commercial speculation, by a fruit shipping company, and were sold out in small parcels and removed, before the judges had opportunity to examine and decide upon their merits; for which reason they were omitted in their reports. We will only say of them that the finest and largest apples in the collection were Gloria Mundi's; and doubtless a trial of their quality would have betrayed the fact that there, as at the east, they are only good to look at. A trial of some fine looking plums and peaches demonstrated that they certainly were amenable to this objection. Indeed, the European grape seems to have been the only fruit in this collection that can be said to have been the equal of the same sorts grown at the east, except in the matter of size and appearance.

We are informed that, after our departure a very superior exhibit of fruits was shown from Oregon; but we have too little real knowledge of its peculiar merits to warrant us in speaking confidently respecting it.

The State of Iowa had also on exhibition in Agricultural Hall, a very extensive and beautiful display of wax specimens of fruits, carefully colored from nature, and supplying a very convenient means of studying the peculiarities of varieties when not in season. These were very tastefully arranged under glass covers, and elicited much attention.

The judges were classified by the Centennial Commission, in groups; and to one of these groups was assigned the Department of Pomology. Prior to the grand display of northern pomological products in September, this group of judges had been represented solely by those members of the group residing at or near Philadelphia; who had met weekly to examine and pass upon such exhibits as should from time to time make their appearance upon the tables, which, up to the time of this grand display, had remained in one aisle of Agricultural Hall. The opening of this northern exhibit at once compelled a resort to the Annex, in which was provided a capacity for the display of fully 15,000 plates, and nearly the whole of which was densely filled during the period of this exhibit.

To provide for the press of work in this emergency, this group of judges were during this week, reinforced by members appointed expressly for this occasion; and on the arrival, a meeting was held, and it was resolved to divide the exhibits into classes, and to assign each class to a relative subdivision of the group of judges. Under these arrangements the work was subdivided and assigned as follows:

Apples—T. T. Lyon, Mich.; Suel Foster, Iowa; W. S. Schaffer, Penn.

Pears—Parker Earle, Ill.; A. W. Harrison, Penn.; Edwin Shatterthwaite, Penn.

Stone Fruits—Wm. Parry, N. J.; M. Martin, —; J. Yellowly, Miss.

Miscellaneous Fruits—Josiah Hoopes, Penn.; J. T. Suit, Del.; Thos. Meehan, Penn.

The work under these supervisions, covering as they did such an immense mass of material, was necessarily very laborious and protracted; especially that upon apples, which comprised a very large proportion of the whole exhibit.

The judges also found themselves somewhat embarrassed by the somewhat novel and peculiar regulations established by the Centennial Commission for the making of the reports and the rendering of awards. The sole award to be made by these, or in fact any of the judges, was a bronze medal accompanied by a diploma, which were to be bestowed upon each meritorious exhibit, without reference to competition; and the function of the judges consisted in recom-

mending such awards and stating explicitly, in each instance, their reason for such recommendation; such recommendation being subject to examination and approval of the Centennial Board before the medal and diploma shall issue.

As will be at once discovered these regulations placed each exhibit strictly upon its own merits: and judges were expressly prohibited from instituting comparisons between exhibits, but were required carefully to state the reasons on which they based their recommendations. This system of making awards of merit is claimed by the Centennial Commission as new, and is, by them, designated as the American system. These awards were intended for exhibitors whether societies or individuals; and in addition to such recommendation, the Commissioners, by express resolution, authorized the issuing upon similar recommendation of diplomas, also to the societies or States under whose auspices such collections should be placed on exhibition.

The judges were also required in addition to the recommendations of medals and diplomas, to prepare an elaborate report upon the exhibits coming under their examination, characterizing such exhibits as they should deem meritorious, which report was intended for publication at the proper time; and they were still farther required at the close of the exhibition to submit a general and final report through the Secretary of the group, covering the entire field of their examinations.

Careful and well considered action in each case was secured by the requirement that the reports and recommendations should each pass the ordeal of an organization by the entire group of judges, and be subscribed to by each member of the group.

It will doubtless be observed that, under this system of awards, the mere granting of a medal and diploma supplies no means of determining the merit of such exhibit as compared with another similarly favored. In such cases the special and final reports must be looked to, to furnish reliable data for such comparison. These reports are expected to receive the fullest publicity, through the press of this country as well as that of Europe; besides becoming part of the history of the exposition by appearing in the published volume of its doings. We are also given to understand that it is the purpose of our State Centennial Commission to issue a volume embodying notices of all Michigan exhibits, with the names of the contributors, as a means of bringing and keeping before the general public a knowledge of the extent and value of the resources of the State.

Notwithstanding the regulation requiring all fruits to be exhibited in Pomological Hall, an exception was allowed as heretofore stated, in the case of Kansas, which State, instead of having a building intended merely as "head-quarters" for visitors from that State, had combined with Colorado in the construction of an Exhibition building, in and about which was displayed nearly their entire exhibit. The object sought in this arrangement seems to have been the creation of a more patent or striking impression upon the mass of visitors; an object which the very liberal appropriation for the purpose, and the spirited support of land grant railroads, combined to enable them to develop very satisfactorily, as was evinced by the crowds of people that constantly thronged the building.

The State of Iowa may be said to have had, during Pomological week the most extensive collection of fruits on exhibition; and this, with those of Kansas and Nebraska, were doubtless the most attractive so far as large size, great beauty and perfection of specimens are concerned, together with freedom from

imperfections of form and insect marks. The chief defects observable even upon critical examination were, as heretofore remarked, a decided lack of color; and, to the taste, an unmistakable deficiency of flavor. The various collections making up the entire exhibit (so far as I saw it), were more or less open to the objection that the popular verdict was appealed to through the extensive duplication of large and showy, but comparatively worthless varieties, like *Gloria Mundi*, *Striped Gilliflower*, and various others of similar character—a practice well nigh universal, and perhaps warrantable where the chief object was to attract and interest the general public.

We will close by saying that we have actually seen little of the final exhibit of Michigan, and knowing that the exhibits of some of the other States were reinforced by important additions after our departure, we have avoided instituting anything like an estimate of their comparative merits: preferring to leave the problem to be more safely and certainly elaborated from the completed and authorized reports of the judges, which will doubtless be soon spread before the public in authentic form.

I trust also that this will be accepted, by the society as my report, as President of the committee of collectors of fruit: with which committee my connection practically, was merely advisory: and that instead of a distinct report from me as chairman, detailed reports of the active operations, together with lists of contributors, will be submitted by each member of the committee, inasmuch as each member of the same to a great extent, conducted his own operations independently of all others.

Wednesday Morning.

The Society was called to order at 10 o'clock, and on motion of Mr. Adams of Galesburg, a committee of five was appointed on nominations to fill the offices for the ensuing year.

The committee as announced by the chair was as follows: J. A. Robinson, Battle Creek; Wm. Rowe, Grand Rapids; C. A. Ilgenfritz, Monroe; E. J. Shirtz, Shelby; Eli Bidleman, Coldwater.

The President also named the following as committee on resolutions: H. G. Reynolds, Grand Traverse; H. Dale Adams, Galesburg; Chas. W. Garfield, Lansing.

The following communication was read by the Secretary:

ORION, MICH., December 4, 1876.

PROF. A. J. COOK:

My Dear Sir:—You will confer a favor by conveying to the State Pomological Convention, at Coldwater, an invitation from the Oakland County Agricultural Society to hold its February meeting in the city of Pontiac, with an assurance that should such invitation be accepted, the Society will make every effort to render the meeting a pleasant and profitable one.

Yours most respectfully,

C. K. CARPENTER.

President Oakland Co. Agricultural Society.

On motion, the next meeting, to be held in February, was placed at Pontiac, in acceptance of the invitation, the exact date to be left with the Secretary.

On motion of Prof. A. J. Cook, a vote of thanks was tendered Marshal P. Wilder, President of the American Pomological Society, for his kindness in granting the use of electrotypes of the Wilder medal, given the Society last year at Chicago.

The first address of the morning was given by Edward Bradfield, of Ada, on "Winter Protection for Grapes," in which he advocated that a grape that was worth having at all was worth covering in winter. He thought the best material for protection was earth. After some discussion as to the influence of drouth and severe cold upon the roots of vines, Mr. M. B. Batcham, of Painesville, Ohio, gave a talk upon the "Use of Fruits in the Home." He would have the use of fruit become more general, not as a relish simply, but as a leading article of food. He would have fruit in variety for breakfast, dinner, and supper. The old idea that children must eat fruit with great caution is exploded; the continuous use of ripe fruit by the little ones is just what will conduce to their health.

Free use of fruit is a matter of economy in both butchers' and doctors' bills.

Housekeepers should give more attention to the preparation of fruit for the table so that it shall not be changed out of its taste, yet so as to give rarity to the dishes and not tire of them while having them continuously served.

Acid fruit like grapes or apples is the very material to eat with buckwheat cakes, and modifies them so that there can be no objection to eating them daily. People may have learned the value of fruit as an addition to the meal in the form of dessert, but do not yet know its value as a neutralizer throughout the year.

It is an easy matter to arrange the garden and orchard so as to afford an abundant supply of wholesome fruit, beginning with strawberries, and ending up with the best keeping apples for the whole year.

The short session of the forenoon closed with an unimportant discussion upon local topics, at an early hour, so as to give an opportunity for committee work and to visit the State Public School, in acceptance of an invitation from the Superintendent.

Wednesday Afternoon.

The President called attention to the fact that there was a special order for the first hour of the afternoon.

At the Lansing meeting, in February, 1876, the following resolution was referred to this hour for decision by the Society. The Executive Committee were unanimous in recommending its passage:

Resolved, That Article I. of the Constitution of this Society be amended so as to read as follows, viz.:

ARTICLE I.—NAME AND OBJECTS.

The name of the Society shall be the Michigan State Horticultural Society; and its objects shall be the development of an adequate appreciation of the peculiar adaptation of the soils and climate of the State of Michigan to the pursuits of Horticulture, in all its branches; and the collection and dissemination of information bearing upon the theory and practice of the same, as well as upon the arts and sciences directly or indirectly associated therewith, or calculated to elevate or improve the practice thereof.

The Secretary read letters from I. S. Linderman of South Haven, Judge Ramsdell of Traverse City, and from the South Haven Pomological Society in opposition to any change in the article.

Mr. Linderman thought the reputation already made by the Society should always be connected with its present name, and put a good deal of stress upon the point that Pomology was not legitimately a branch of horticulture, but a tree in itself.

Judge Ramsdell thought the present pleasing relations should exist between

our Society and the State Agricultural Society, which could not be if we encroached upon their territory as was proposed.

The South Haven Pomological Society simply reported their discussions upon the topic and the following action of their Society:

The following resolution was offered by Mr. A. G. Gulley:

Resolved, That it is the sense of this Society that Article I. of the Constitution of the State Pomological Society should not be amended or altered.

It passed unanimously, with the repeated remarks, "Let well enough alone," "Long live the State Pomological Society," etc., etc.

On the other hand, letters were read from Edward Bradfield of Ada, and Prof J. C. Holmes of Detroit, favoring the change.

Mr. Bradfield said when the matter was first broached he was opposed to covering so large a field, but now felt satisfied that the true work of the Society should take in floriculture and gardening.

Prof. Holmes considered the various departments of horticulture were so allied to each other that they would naturally come under the same society work, and he believed the only generous way for our organization was to admit all of horticulture of whatever specific name.

Speeches were made by Messrs. Lyon, Rowe, Beal, Reynolds, and others.

The vote when taken was decided to be in favor of retaining the old article of the Constitution and the old name by a majority vote of seven. Thus a question was finally settled which had been agitated for years.

Some of the members present were in favor of confining the work of the Society to Pomology, while the majority were strongly opposed to any such construction of the society work, but favored the adoption of a liberal attitude toward Floriculture.

The report of the committee on nominations was next received, as follows:

Your committee, after canvassing the interests of the various localities of the State, and the best good of the Society, respectfully recommend the following names for officers:

President—T. T. Lyon, South Haven.

Secretary—Charles W. Garfield, Lansing.

Treasurer—H. Dale Adams, Kalamazoo.

Members of the Executive Board—N. Chilson, Battle Creek; Eli Bidleman, Coldwater.

J. A. ROBINSON, *Chairman*.

The report was accepted and the result of a ballot for the officers was in accordance with the nominations.

A vice president was selected for each of the fruit counties.

The question of

ORCHARD CULTIVATION,

compared with mulching as a means of stimulating growth and fruit, was taken up and discussed *pro* and *con*.

Mr. Barry, of Rochester, New York, was called upon to reply to this question. He, however, refrained from expressing any opinion of his own as there was a great diversity of views among successful orchard men—some favoring plowing, others only mulching.

Another gentleman reported that he knew of a case where a grower plowed his orchard very deep and in two years after there was not a tree left in the orchard.

Mr. Chapman said that he plowed an orchard which had been in grass for many years. He ordered his plowman not to plow deep, but before he knew it he had plowed so as to cut off a good many roots. He then manured the land and cross-plowed and sowed to wheat. Notwithstanding the deep plowing the trees have grown very thriftily, and the general effect upon his orchard has been good.

Mr. Bateham recommended *very* shallow plowing and then scratching with a cultivator.

Mr. Lyon said no answer could be given to cover all cases.

Prof. Beal said that at the college he had been trying an experiment. He had left a part of the orchard in grass and cultivated another part. This experiment had been going forward for the past seven or eight years. Those trees which were cultivated were healthier and the fruit fairer than those left in grass.

The verdict was that the comparative value of each process depended so largely upon climate, soil, etc., that no definite rule could be given for all orchards. Orchards upon a shallow soil where the roots are all at the surface certainly cannot be plowed deeply without serious injury to the roots, while upon a deep soil trees may be cultivated deeply without danger of injuring the trees, but with promise of good results.

Mr. Bateham inquired if the grape-vine louse or phylloxera was doing injury upon the roots of vines in the State.

There was no testimony regarding this insect, but several members spoke of the grape curculio, which finds lodgement in the berry of the grape.

Wednesday Evening.

The exercises of the evening were enlivened by music furnished by a quartette of ladies and gentlemen. The first address was by Prof. A. J. Cook, of the Agricultural College, upon the topic

CANKER WORMS.

Anisopteryx vernata, Peck. *A. pometaria*, Harr. Family, *Phalanida*. Sub-Order, *Lepidoptera*.

The subject of this lecture is is no new one in the literature of our State. It finds a place in the Reports of the State Board of Agriculture for 1865, 1866, and 1874, occurs in several of the reports of this Society, and not infrequently attracts the attention of the readers of our various State and local papers. In other States it has been even more prolific of discussion. Yet, notwithstanding the importance of the subject, the ease with which investigation may be made, the fact that our best naturalists—men whose only hope of genuine success lies in care and accuracy—have given it attention; notwithstanding all this, few subjects have been more deeply involved in confusion and mischievous error.

Just at this time, in view of the spread of this canker-worm evil in our State, and the great practical movement that mistakes be rectified, it seems most opportune that the subject should be brought fully before you, that all may work understandingly and thus easily vanquish a pest, which otherwise may continue for long years, as has been the case in New England, to vex the pomologist and bring his best efforts to naught.

Before I commence this discussion, I beg leave to call your attention to authors who have given wise attention to this subject, and from whom I shall

freely glean, as I proceed to its consideration—premising this list with the statement that there is no “the Canker-worm,” but that there are two species, the spring Canker-worm, *Anisopteryx vernata*, Peck, and the fall Canker-worm, *Anisopteryx pometaria*, Harr. There is a marked resemblance between these, both in appearance and habits, though the former generally appears as a mature insect in the spring (March), while the latter comes forth in the autumn (October and November).

The spring Canker-worm, *A. vernata*, was first named and described by Prof. W. D. Peck, in a prize essay first published in the Massachusetts Magazine, for September and October, 1795; reprinted in 1796 in the Rules and Regulations of the Massachusetts Society for Promoting Agriculture, pp. 34-35, and again appearing in the New England Farmer, July 6, 1827. In Harris' most valuable work, Injurious Insects, edition of 1862, pp. 460-472, the fall Canker-worm, *Anisopteryx pometaria*, is described as a variety of the *vernata*, with the suggestion that it is possibly a new species, in which case the name *pometaria* is suggested. And from this uncertainty arose all the doubt, error, and erroneous advice which has marred our canker-worm literature. Partial investigation, as well as a little learning, is a dangerous thing. Dr. Fitch (see New York Agricultural Report for 1856, pp. 342-343), refers to both species, but changes their names. Dr. Packard does the same in his Guide to the study of Insects, pp. 324-335. Dr. LeBaron, in his second report, pp. 99-116, gives a very full and interesting account of *A. vernata*, which, with our added light, will need revision. Prof. Riley, in his second report, pp. 94-103, gives an account of “the Canker-worm,” with the current errors, which he corrects in his sixth report, pp. 24-29, seventh report, pp. 80-90, and eighth report, pp. 12-22, wherein may be found the fullest and best exposition extant on this subject. “The Canker-worm” is discussed in the 1st Report on Insects of the Province of Ontario, pp. 86-87, and the Canker-worms in the report for 1875, pp. 25-28. Mr. B. P. Mann gives in the proceedings of the Boston Society of Natural History, a full and very interesting *expose* of the subject, pointing out the errors which had enveloped the question since the days of Harris, yet himself mistaking the species, calling each by the other's name, which mistake was set right by Mr. H. K. Morrison in the Canadian Entomologist, vol. 6, pp. 29-32.

Dr. A. S. Packard, in his magnificent monograph on this family, just published by the Interior Department, unfortunately calls *pometaria autumnalis*, which shows that the confusion which has long characterized this subject has not yet been fully cleared up.

Having thus referred you to the authorities on this subject, let us next proceed with its history, the natural history of the two species, their habits, and then see what practical suggestions we may deduce that shall help us to retain our proud position as the banner apple region of the whole earth.

HISTORY OF THE CANKER WORMS.

These insects are both natives of our own country, and doubtless fed originally on the linden or basswood, elm, crab apple, wild plum, and wild cherry,—on all of which they seem to thrive. We find mention of their having been a serious pest in Massachusetts as early as 1789. Prof. Peck states that they were first observed in the Southern States, which he supposed to be the place of their nativity. Since then these pests have not only become general in Massachusetts, but have attracted attention by their serious ravages in New York, Ohio, Illinois, Wisconsin, and even Iowa and Missouri. In our State they

appeared at Marengo, Calhoun county, in 1863; since which time I have known of their ravages at Plymouth, Wayne county, at Commerce and Pontiac, Oakland county, and now at Adrian, Lenawee county. That they have made their presence felt elsewhere among us is not improbable, though I have not been advised if such is the case. So far as I have examined, and so far as I can learn from others, it is the spring canker-worm, *A. vernata*, that works mischief in the west, while east the fall species, the *A. pometaria*, is most common, and hence the greatest pest. This opinion was sustained by a careful examination of specimens from Lenawee county, examined in February. As we shall soon see, it is of great practical moment that we know which species is among us, and as it is a question of easy solution, you may all render aid. It is a question of no little interest, whether the canker-worms spread from some one native spot, east or south, as the Colorado potato beetle spread from the western plains; or whether they come upon us from their forest haunts, perforce, as their native food plants are sacrificed at the beck of civilization. The latter view suggests itself, from the fact, as we shall soon see, that nature has placed a serious impediment in the way of the rapid spread of these insects, coupled with the fact that they make their appearance, ever and anon, in old orchards many miles from any previous region of attack. This question can only find solution in a wider and more careful research.

Just now,—May 14,—I learn from Mr. E. F. Smith that a canker-worm, very likely one of these species, is entirely defoliating the elms about Ionia.

DESCRIPTION OR NATURAL HISTORY.

The differences of these insects, which appear in the original descriptions, as given by Prof. Peck and Dr. Harris, have been graphically set forth by Mr. Mann and Prof. Riley, in their papers already referred to. But let us first note the points in which they agree: The general color of each is light gray or ash color. The male expands about one and one-half inches, *A. pometaria* being slightly the larger. The females are apterous, or without wings (see fig. 1 and 2, *b*), and nearly one-half an inch in length. Like all of this family, the larvæ (see fig. 3 *a* and 4 *f*) are geometers, or measuring worms; that is, they possess fewer feet than do most caterpillars, so that in crawling they are obliged to loop or measure, hence the appellations loopers and measurers so often applied to such caterpillars. Another family peculiarity is that of dropping by a thread spun from their mouths, thus mimicking their distant relatives the spiders, except that the spiders manufacture their silk at the opposite extremity of the body; hence the term drop worms. Both *vernata* and *pometaria* pupate in an earthen cocoon a few inches beneath the surface of the ground.

Let us next observe the differences between *vernata* and *pometaria*. In *vernata* the antennæ of both males and females are only forty jointed, while in *pometaria* they are over fifty jointed. In the female of *vernata* (see fig. 1, *c*) they are hairy, while they are smooth in the female *pometaria* (see fig. 2, *c*). The primary wings of the male *vernata* (see fig. 1, *a*) are crossed by three black wavy lines, often quite indistinct, while a fourth wavy line of white crosses the wing still farther out, which contains an oblique dash of



FIG. 1. ANISOPTERYX VERNATA.

a, male; *b*, female; *c*, antenna of female; *d*, ovipositor.

black near the apex. Across the primaries of the male pometaria (see fig. 2, *a*) are two white wavy lines, the outer one containing a heavy white dash at the anterior border, which is more distant from the outer border, being broken from the main line. The female of *vernata* has a black stripe on the back, and a two-jointed ovipositor (see fig. 1, *e*), both of which are wanting in *pometaria*. The cocoons of *vernata* are of brittle earth, only lined with a few silken threads, and are thus easily broken, while in the *pometaria* they are composed largely of tough silk, and will bear considerable pressure. The chrysalis of the female *vernata* is destitute of wing sheaths, while, strange as it seems, these are present (see fig. 4, *g*) in the *pometaria*. May not these, like the splint bone of the horse, bear record of a progenitor which had these organs well developed? The terminal spine of *vernata* is simple, while in the chrysalis of *pometaria* (see fig. 4, *g* and *h*) it is forked. The larva of *vernata* (see fig. 3, *a*) has only ten legs, while in the *pometaria* (see fig. 4, *f*) there are twelve, the extra pair being on the eighth ring or segment. Prof. Riley states that the head of *vernata* is more distinctly mottled with black. The character of the stripes (see fig. 3, *c* and *d*, and fig. 4, *c* and *d*) differ greatly in the



FIGURE III.

a, larva; *b*, egg magnified and cluster; *c* and *d*, a joint showing back and side.

larvae of the two species, but are subject to much variation in both. In *vernata* they are at first quite dark, but grow lighter with age. The eggs of *vernata* (see fig. 3, *b*) are oval and laid in irregular masses in some concealed spot, as under the scales of bark, and are not covered with glue. Those of *pometaria* (see fig. 4, *a*, *b*, and *e*) are of the form of a flower-pot, with a puncture in the center of the top and a distinct ring of brown surrounding these about half-way from center to circumference. These are deposited on the branches of the tree in exposed situations, placed side by side close together, with much regularity, and are well covered with glue. Prof. Riley states that *vernata* deposits from 50 to 150 eggs, while *pometaria* deposits from 100 to 200.

Let us next give attention to the different stages of these two insects, that we may discover aught of difference that exists in the time of appearance in any of the stages from egg to imago. *A. vernata*, or the spring canker-worm, as we might suppose from the name, comes forth as a moth (see fig. 1, *a* and *b*) in early spring during the month of March.* The eggs (fig. 3, *b*) are now laid, as will be remembered under bark-scales, old bird-nests, in clumps of dry leaves, etc., where the females (fig. 1, *b*) by use of her two-jointed ovipositor (fig. 1, *e*) is well fitted structurally, to place them. *A. pometaria* or the fall canker-worm (fig. 2, *a* and *b*), on the other hand, comes forth for the most part in October and November, a few may delay till spring. I have often seen the



FIG. II, ANISOPTERYX POMETARIA.

a, male; *b*, female; *c*, antenna of female.

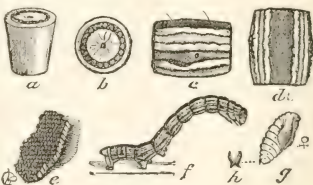


FIGURE IV.

a, egg; *b*, top of same; *c* and *d*, back and side of joint; *e*, egg cluster; *f*, larva; *g*, chrysalis of female; *h*, spine of same.

* During the past winter, 1877, these come forth in February, the development being accelerated doubtless by the warm, beautiful weather, which is more characteristic of a Michigan April.

males flying at Cambridge, Massachusetts, during the months of December and January, improving the warm sunshine that they might sally forth in search of a mistress. The females, after celebrating their nuptials, deposit their regular egg-clusters (fig. 4, *e*), generally on the branches of their food plants, though I have taken them at Cambridge from off the fences underneath the magnificent elms, for which that city is so noted. These egg-clusters are covered with a glue that they may the better resist the cold and damp. Thus the eggs of the *vernata* may be seen from February till May, while those of *pometaria* will be found from October to May.

So far as I know both species issue from the eggs as larvæ (see fig. 3, *a*, and 4, *f*), about the same time—a little prior to or at about the period that the apple leaves burst forth. I think, too, that there is little difference in the length of time which they remain as larvæ. Thus both species may be found doing their ruinous work from some time in May till late in June. From the above it will be seen that *vernata* remains as a chrysalis much longer than does *pometaria*—from July to March, instead of from July to October. The dates then are as follows: *Vernata*—imago in March, eggs from March till in May, larvæ in May and June, chrysalis (see fig. 4, *g*), from July till March. *Pometaria*—imago in October, November, December, January, and perhaps later, eggs from October to May, larvæ same as in *vernata*, while the chrysalis may only remain from July to October.

HABITS OF THE CANKER WORMS.

As the female moths issue from the ground, they are impelled by instinct to seek such a position for their eggs that the larvæ when they escape from their egg-prison may find suitable food near at hand, hence they strive to attain to the branches of those trees that will in due time afford the desired pasturage for the to be larvæ. But as her ladyship has no wings she must needs crawl up the trunk of the tree. This feat accomplished, the *vernata* with her ovipositor commences to obtrude her oval eggs, to the number of 100, more or less, under the loose bark, etc., while *pometaria* places her even greater number of truncated cones, in regular order, anywhere upon the branches. The moths have been usually regarded as nocturnal, though according to Dr. Le Baron the *vernata* is more properly crepuscular. At least he found them most active in early evening, when the wingless moths fairly thronged the tree trunks in their eagerness to reach the desired situation for egg-deposition. This was in the middle of March. Later in the evening he found them far less active. The males of both *pometaria* and *vernata* are often seen on the wing during the day. Yet they seem to have learned the proper time for courtship, as they come eagerly forth to act as escorts and play the gallant to the females as the latter take their evening stroll in the quiet twilight. In May, as soon as the eggs hatch, the wee larvæ—almost microscopic in size—commence depredations by eating holes in the young tender leaves. The foliage soon appears as if scorched, suggesting the appropriateness of the term canker-worm. Later if the larvæ are very numerous, as they are wont to be, the entire foliage is consumed, leaving little to be seen except the midribs of the leaves.

Ever and anon the larvæ will fall from the tree, hang suspended by a silken thread they spin for the occasion, and swing to and fro as they are borne by the wind; and often if the wind is strong, they are carried to other trees. Whenever they are jarred they will thus prepare for a swing. Whether they ever do this “simply on pleasure bent” anticipating the pleasing sensations of a delight-

ful swing, I am not prepared to say. Very likely this habit was acquired through the agency of natural selection, for certainly the insects would be safer if they dropped at the shiver caused by alighting cherry-bird or oriole, and would thus survive the perils by day while their less fortunate companions would be exterminated. A habit would thus be formed which would aid the larvæ in their "struggle for life" and if it conferred pleasure at the same time it would be still better for the insect.

As to the kind of food preferred by the different larvæ, there is some doubt, though it is probably true that both species will live and thrive on apple, elm, pear, plum, cherry, and linn. From the fact that in Cambridge, where *pometaria* is much the more common the elm is seriously defoliated, while here where *vernata* seems most abundant, and perhaps the only species, the apple is more subject to devastation, we might infer that the fall canker-worm preferred the elm, while *vernata* chooses the apple. But we must not forget that in New England the elm is far more common, as it is grown extensively for shade, and is thus brought under immediate observation. In fact these drop-worms demand attention as they drop by their silken cord and hang suspended just above the side-walks to be borne off by the first passer-by, who very likely is ready to faint at the sight of a worm. While with us the apple tree is far more cultivated and far more subject to observation. This question needs farther investigation, and it is a pleasing fact that we may all contribute our mite in the work of obtaining the desired information. Late in June these larvæ spin a cord by means of which they swing to the ground, which they at once enter to the depth of a few inches: *vernata* to form its earthen cocoon with a silken lining, in which it may rest as a chrysalid till the next March: while *pometaria* weaves its cocoon of silk, incorporating but little earth, taking more pains than *vernata*, even though it remains in its pupa state only about one-half as long.

Thus with the natural history and habits of these destructive pests before us we are quite prepared to successfully consider the subject of

REMEDIES.

It will be seen at once that we have several lines of attack by which we may hope to overcome this canker-worm evil. We are not compelled, as with that worst enemy of the pomologist, the codling moth, to limit our fire to a certain time or to a single stage of the insect's development. We may seek to destroy the pupæ while they are "quietly biding their time" snug in their cocoons: we may essay to prevent the wingless female from passing into the tree; we may make war upon the eggs before they hatch; or, if all other precautions have been neglected, we may still hope to rout the enemy even after the larvæ have commenced their attack.

HOW TO DESTROY THE CHRYSALIDS.

We have seen that the canker-worms, both *vernata* and *pometaria*, go a few inches beneath the surface of the ground to pupate,—*vernata* in a fragile cocoon to remain as a chrysalis till March, while *pometaria* constructs a firmer cocoon wherein the inchoate insect abides till October. Hence, we have not far to seek that we may find a good and sufficient means to nip the evil while yet in the bud. To accomplish this the ground beneath the affected trees should be plowed in August or September, which of itself will prove fatal to very many of the pupæ, especially with *vernata*, whose fragile cocoons will be very generally broken, and Prof. Riley has shown that they seldom survive

this calamity. But to render the operation still more certain of effect it will be well to turn in hogs, advice which I am sure will bring an amen from our most worthy Secretary; and to stimulate their scent to greater keenness and activity, it will be well to scatter a few handfuls of shelled corn beneath the trees that were attacked the previous spring. In this way we may hope to greatly thin out these hidden springs of mischief, even if we do not wholly eradicate the evil. If, as I think, it is the vernata alone that gives us trouble, this will be a very valuable aid in the work of extinction. We shall, too, in this case, receive valuable assistance from the birds and chickens if we only do our part, by plowing under the trees in early autumn.

TO KEEP THE FEMALES FROM ASCENDING THE TREES.

The fact that the females of these moths are apterous, or without wings, and hence must gain the branches of the trees by passing up the trunks, was early seized upon as the key to the practical solution of this evil; and as a result, several ingenious contrivances have been invented to render the upward march of the females impossible; some of the most important of which I will proceed to explain. The most ancient plan, hence one sustained by the trying ordeal of long experience, is to surround the tree with a ring of tar or other viscid material, from five to eight inches wide. That this might not injure the tree, and that it might be easily removed when no longer needed, as it sadly disfigures an orchard, a band of canvass, roofing felt, or other cloth or thick paper, was first tacked closely about the tree, and that the connection might be the closer, it has been advised to besmear the inside of the band with a thin clay mortar. The tar is then applied to the band. The objection to this method lies in the fact that the tar dries so rapidly, that it must be renewed each day to secure the desired end.

Mr. John Tinker, of Clinton, Wisconsin, as quoted by Dr. Le Baron, found that the material remained viscid longer, and was more easily applied, if molasses were added to it. He found too by carrying the can of tar in a pail of hot water, it was more easily applied. One man could with a brush, make the application to a thousand trees in eight hours. The amount of tar required was from three to five gallons. It has been stated that printer's ink and melted india-rubber is preferable to either coal or pine tar. Now that we know that vernata only comes forth in March, or February at the earliest, and a part of April, this remedy seems less burdensome than when we supposed, because of our ignorance, that the application must be made from October to April.

Dr. Le Baron found a less expensive method very effectual: Take an old rope, three-fourths inch or inch will do, put this close around the tree, two or three feet from the ground, let the ends lap a little and then tack, with three penny nails. Then put a piece of tin four inches wide around immediately outside of the rope, making the center of the tin band to touch the rope, and tack this to the rope and tree. Of course, if this is well put on, no moths can pass between it and the tree, and though, says Dr. Le Baron, a few got on to the tin none so far as I observed passed above it. Whether pomataria would be thus easily fooled, is a question to be settled by actual trial. The females thus barricaded, deposit their eggs between the rope and ground. These may and should be destroyed by applying kerosene oil, else the larvæ, upon hatching, will still gain the desired position, and do the fatal mischief. We see, too, a reason for having the bands low down, as the eggs will be in more compact quarters, and more easily destroyed.

More than ten years ago Prof. J. C. Holmes sent to our Agricultural College what he termed Ordway's tree protector, of which, as will be seen by referring to the report of the State Board of agriculture for 1866, page 73, he spoke in the highest terms. This same invention is described and illustrated in that invaluable work of L. Tucker & Son, Register of Rural Affairs, volume 7, page 189, where the statement is made that it is entirely effectual. We are indebted to these gentlemen for the use of engravings whereby to secure electros to illustrate this remedy. This is made by taking a strip of tin four inches wide, and of sufficient length that when bent into a circle, it will exceed the diameter of



FIGURE 5.

the tree by at least six inches. One edge of the tin is bent over, and a piece of factory (fig. 5), or other cloth as long as the tin and eight inches wide, has one edge inserted, when the tin is pounded down so as to firmly clasp the cloth. The ends of the tin are also bent over in opposite directions, so that when the tin is bent in form of a cylinder, they may be clasped, and quickly pounded together. This is now made to encircle the tree (see fig. 6), with the cloth uppermost, when the ends are clasped and firmly united, the cloth drawn tense and bound firmly and closely to the tree by a strong cord (see fig. 7). Prof. J. J. Thomas, the reliable editor of the work referred to, speaks very highly of this contrivance. He refers to Mr. Jones, of Newark, New York, as having used it with absolute success, though he took the further precaution of daubing the lower inner edge of the tin with a mixture of equal parts of kerosene

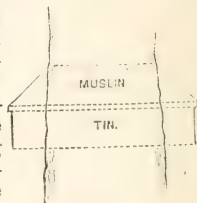


FIGURE 6.

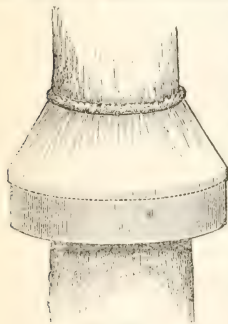


FIGURE 7.

and castor oil; as this is so well protected from the sun by the tin and cloth, it need be applied only at intervals of several days. This fells the enemy to the ground. This for *vernata* should be put in place as soon as spring opens, and remain so long as there are any moths to trap. Were it not that Prof. Beal is present, and might report me, I might say that I had half wished for the advent of the canker-worm into our college orchard, that I might personally test this protector.

Another method is described and illustrated in volume 5, page 23d of the Register. It is said to be excellent, but is too expensive for general use, and so I will omit the description.

TO DESTROY THE EGGS.

We have already seen how we may destroy these if deposited beneath the bands, by the use of kerosene oil. If they are deposited according to the will of the insect, without let or hindrance, there is no way to destroy, if from the *pometaria*: but in case the *vernata* is the offender, we may still destroy great numbers, by scraping off and burning the scales of bark, old birds' nests, clusters of old leaves, etc.

TO DESTROY THE LARVÆ.

If no precautionary measures have been taken, and the larvæ have been

allowed to hatch, the pomologist is still not without hope. In case the tree is not in bearing, both species of the worms may be destroyed by syringing the tree with a mixture of Paris green and water. Even if in bearing, I should still do this. I think the Paris green applied in June could do no injury. But even if the fruit must be sacrificed, better this than the tree. It will be remembered that these are drop-worms, and if the tree is jarred will fall suspended by a silken thread. We can make use of this habit, and at the same time illustrate the doctrine of cremation. As they swing from the tree, we can, by using a pole, easily gather them on to a bed of straw, which can then be fired, when our diminutive enemies may feel quite like heroes, as they depart amidst flame and smoke.

There are several natural enemies of the canker-worms, to which we are so largely indebted, that we ought not to pass them without a word of praise. Our large fine ground beetle, so beautifully dotted with silver or copper, *Calosoma calidum*, feasts on the larvæ as they attempt to enter the ground, and afterward on the pupæ. Some of our wasps take the canker-worms to provision their cells. A two-winged fly of the genus *Tachina* is also said to destroy great numbers, while a minute mite, and a tiny species of *Platygaster* preys upon the eggs. Those true friends, the birds, too, are found doing good work here as elsewhere. Mr. C. J. Maynard, see *American Naturalist*, volume 8, page 271, has taken canker-worms from the stomachs of over thirty birds, among which are the cherry bird, robin, oriole, crow, red-winged black-bird, and cat-bird. Oh, that all might know and appreciate the valuable services of our bird friends!

CONCLUSION.

Thus it will be seen that the canker-worm, though one of the most serious evils, when it makes an attack may be overcome in several ways, and as we now understand that there are two species, and know the difference of their habits, the extermination is not so serious a task. Experience in our State, plainly teaches that if an orchard is once attacked, ruin is almost sure to follow, unless the evil is thwarted. Yet from the impediment in the way of locomotion, the spread of the insect is slow and quite uncertain if the distance between orchards is anywise considerable. That it will pay to defend an orchard when once attacked is most certain. That the insect has not spread, or continued in any locality where it has once gained a foot-hold in our State, may tend to allay fear, yet reason and the experience east point rather to the wisdom of our Lenawee friends, in arousing the people to make the demand that the pest shall be exterminated, though but one locality be infested, as then we know we are safe. We never feel so safe with an enemy beleaguered, as we do with it exterminated.

The lecture was illustrated throughout by charts and blackboard. The Professor also exhibited the materials used in trapping the insects, and actually made the traps before the audience. The insects themselves, in all their forms, were passed through the audience, that all might get an accurate idea of the pest.

Mr. Mann, of Adrian, gave an account of the wholesale destruction the insect had begun on one orchard near Adrian, with the methods they had there introduced for checking its ravages.

Mr. Merriman, of Grand Rapids, remarked that both species of the insects described by Prof. Cook were found at Grand Rapids and vicinity, and had caused considerable damage.

The Society then listened to a carefully prepared address by Henry G. Reynolds, of Grand Traverse county, on

THE ISOLATION OF OUR COUNTRY HOMES.

My subject, owing to a slight error, has been somewhat incorrectly announced. The one to which I ask your attention is a most practical one, and concerns deeply those of us, especially the ladies, whose lives are passed upon the farm. It is "The Isolation of our Country Homes."

One of the saddest features of European peasant life as seen by the American traveller to-day, is the cramped and squalid character of their homes, whether in city or in country. The parallel of our rural life is unknown on the continent except in cases of the very wealthy; all of the middle and lower classes of country folks being huddled together in crowded little villages, often of not more than one or two hundred inhabitants, and yet as compactly built as though in the heart of a large city. The main street is generally from ten to thirty feet wide, or perhaps I should more correctly say, narrow, uniformly paved with cobble stone, and rarely with any pretense of a sidewalk, the houses being built flush with the line of the street. There is chance for neither tree nor shrub, nor can the smiling welcome of a bright front yard greet us with its pleasant color. No wonder is it that the people throng the beer gardens? Within the houses the human and brute members of the family occupy adjoining rooms, and are thus literally next door neighbors. The distinction between street and alley is not recognized, and the former has to serve all the purposes of the latter, so that at the door of an apartment occupied by one of these extremely domestic animals it is not at all uncommon to see a pile of manure blocking the side of the street and draining into the gutter. A Chicago gentleman while recently stumbling through the narrow street of a picturesque little Swiss village, made the remark that if he should permit the alley in rear of his lot at home to become as blocked up, uneven and filthy as was that street, it would be complained of as a public nuisance.

In viewing one of these dreary little abodes of crowded humanity, and reflecting that to most of its inhabitants this and a few neighboring towns of similar character constitute their whole known world, their entire sphere of life, the whole range of mental vision, their widest field for thought and action, and that here they must live and strive day after day till life wears out, the unbidden thought forces itself upon us: To what use or purpose is this great mass of human life!

Their daily routine must be as eventless as was Mark Twain's when in early boyhood he undertook the responsibility of a diary, but could find nothing of greater moment to record than the regular announcement, "Got up, washed, went to bed," although I fear the central fact of his narrative would have to be omitted by the more truthful ones of these villages.

In seeking the cause of this strange city-like crowding in even the most remote country places, my first thought was that land was too valuable merely from its productive power to be wasted in giving men space to stretch themselves. But I think that the true cause is to be found back in the feudal ages, when a village meant but the collected retainers of some lord of the soil, who would naturally desire to herd them as compactly as may be; or, still earlier, we may perhaps find the cause in the custom of putting around each town a defensive wall which, by thus limiting the area for buildings, would make

crowding the only method of growth. Whichever one, or whether all of them were the cause, they are all thralldoms from which Columbia's shores freed those who reached them. Is it a wonder, then, that our fathers, those who created as it were, the mould in which was cast the form of American habit, in the rebound from their strictures about their former life, should come to feel that any breadth of free land about them could but be a blessing. Thus, too, rose that class of men,—a most useful one to us than more ease-loving followers,—who, when population has become so dense that the smoke from a neighbor's fires rises within sight of their doorstep, feel themselves uncomfortably crowded and begin to think of "pulling up stakes" and once more acting on their favorite cue, the famous advice of Horace Greeley, even though they be no longer young, and by reason of age it has long since ceased to apply to them.

In this way have we sprung from one extreme to an opposite which is hardly less objectionable, and in seeking to escape the evils of crowded life we have too nearly lost the blessings of social life. Man was created a social being. It is not well for him to dwell apart from his fellows. Contact and friction with other minds is needed to polish the rough corners of his nature and to preserve it from assuming strange and distorted shapes. The mind corrodes or rusts unless stirred by the healthy surging of social welcome. Occasionally we hear a wonder expressed that in this representative government of ours, the largest class of our population—the food producers—are rarely ever represented by one of their own number. And it is true, for the Rip Van Winkle-like separation to which a man generally dooms himself in accepting the life of a farmer, but too surely leaves him behind in the march of ideas, lingering among the notions of his early life.

This is the chief drawback from rural life. All other instincts of man's being entice him to the country. In it he is in constant contact with unhidden nature, and her varied charms are but his daily portion. Strength, vigor, health and comfort, all await him. Childhood's sweet delightful memories of happiest hours spent in roaming through deep forests or eager watching over silent pool, of joyous harvest and snug winter home, of swelling bud and opening leaf, of the full bright livery of laughing summer; these and much more lure him on,—but whither? away from his kind, away from that generous emulation which is as a constant spur to the maintenance of the form and comeliness of life.

That farmers feel this want, this void in their lives, is seen in many ways. How is the most casual errand made the excuse for a lengthened visit, and trips to town are made on the slightest pretext and often occupy the entire day. A social friend, whose farm lay within easy walk of town, was joked about his trouble with potato bugs, and it was suggested that if he brought but one each visit to the town his farm would soon be free. Thus it is with the men, who in these and other ways, and by the variety of this out of door life, succeed in hiding to some extent the nakedness of their lives out of their sight. But how is it with the farmers' wives? Let the melancholy statistics of insanity answer. Of women, more recruits to the asylums of our country are drawn from among farmers' wives and daughters than from any other class. Theirs is not the open field and the blue sky. Four walls enclose their field, and beyond these walls stretch weary rods of muddy road to the nearest neighbors. Few farmers can afford an extra horse to bridge this district, and the home can seldom spare its mother for the length of time needed to make a distant visit. Is it strange that young girls who see both sides, should hesitate to follow even the voice of love

when it leads them to a farm—to a daily round of toil varied from year to year but by the addition of new cares as the young farmer gradually toughens to his work, and the whole being perfects itself into a machine! Yes, combined sewing, knitting, washing, and baking machine. The mind to live and thrive needs food as surely as does the body, and just as the stomach requires food of various kinds, so are books and papers alone insufficient to satisfy the mind. We must have intercourse with our fellows; and of this our present style of farm life gives us, and especially our womankind, far too little.

But what is to be done? Could our farms but be placed as the leaves of a book the answer would be simple; but though the perpendicular character of some regions gives us a suggestion of what might be accomplished by the plan of having a "good deal of land to the acre," I am inclined to think that the same amount of energy that would be needed to make passable roads in such a case, would go far towards a solution of the difficulty in more level countries, by perfecting the road surfaces and thus making all distances more easily traversed. How shall we avoid growing poor in social pleasures as we grow rich in acres? My first answer, if I may be excused the bull, would be not to grow so rich in acres. Too many of us are playing the part of land speculator to the detriment of our interests as farmers. Let us beware lest in trying to swim two planks we sink between them. How many of us are paying taxes upon working roads, and building and maintaining fences for more land than we can cultivate to the best advantage? If we argue that we hope at some time to extend our operations and to need more land, that land is now cheap and will then be dear; as far as this one argument goes, our act is the sheerest speculation; and inasmuch as there is almost no likelihood that our farming land will rise in value as rapidly as would well selected town lots, we are making our speculation with very poor judgment. We all object to having land near us held by non-residents, yet are we not placing in precisely that position all land that we hold over and above our ability thoroughly to improve? But suppose that we have no more than we use, is it yet certain that no part of our farm is acting as a dead weight, contributing nothing to our prosperity, but rather serving to drag us down?

You all remember the Great Eastern and the seemingly insignificant little Monitor, and the difference in their usefulness. Many a farm has been divided or wholly lost by a mortgage given for the purpose of adding to it. Of course more land was greatly needed. The cattle were suffering from restricted pasture and the wood lot was nearly exhausted. But the practice of a little more book farming would serve a better purpose than the mortgage-bought additional land. A partial use in as far as circumstances allow of the principals of cattle soiling would greatly reduce the area needed to support our stock, and our wood lots might be much smaller and never be used up if more wisely arranged. As an illustration of the non-mortgage plan let me mention the case of one of the most successful of our Michigan farmers who began with 160 acres; but needing ready money to cultivate more thoroughly, he sold a forty and put the proceeds entirely upon what remained. The results were so satisfactory that he repeated the operation, this time, however, halving his farm and leaving but 60 acres. Finally he sold 20 more and now finds the remaining 40 much the most profitable farm that he ever possessed. As regards the consideration in hand, halving the size of our farms doubles the number of neighbors within reach. It is true that diminishing the size of our farms necessitates raising the quality of our farming, but "high farming" is like free

trade, in itself a most desirable thing, indeed I may say the only perfect and unwasteful method: and though impracticable and dangerous in new countries, yet an end at which all should aim and toward which we should progress as rapidly as circumstances will allow.

The second and much the most important, because the most generally practicable, means by which we may lessen our isolation, is one to which I have already alluded,—the improvement of our roads.

Perhaps the bearing of this factor can be best illustrated by a little personal experience. It happened in June a couple of years since in LaSalle county, Ill., though there is ample opportunity for similar experience much nearer home. Having six miles to go into the country and but little time for the purpose, I took a livery horse and started, but the condition of the roads was such that, straining the quality of mercy and the horse's muscles as much as my conscience would allow, it took me two hours to make the distance! When I ventured to remonstrate the natives laughed at my innocence, and told me that if I would but visit them in early April they would guarantee me against any such breakneck speed as three miles an hour!

The people of that region were virtually twice as far removed from one another, and twice as far from town, as would have been the case had they made their roads such as to make travelling at six miles an hour a possibility. Yet worse, to ladies these roads put an absolute bar against going out on foot at all. It is not within the purpose of my subject to enlarge further upon the extravagance and folly of keeping anything but first-rate roads. They are wisely called the arteries of the country's life, and among a self-governing people may well be taken as an index of the degree of civilization. Good roads tempt social intercourse. Bad roads smother it.

The foregoing methods of ameliorating the isolation of our country life, viz.: the improvement of our roads and limiting the amount of land held by us to our actual needs, are both within the practical reach of every one of us as at present situated.

There are other methods possible to those not yet located, by which the difficulty can be entirely overcome; and though there are decided objections to both, yet the object to be gained seems to me so great that to secure it many minor difficulties may well be endured. The first of these has I believe been tried to a limited extent in this State, and consists simply in dividing the country into long and narrow farms, fronting endwise to the road along which the houses are built.

If the land on either side of a given road were thus divided into farms running back one mile, every acre would have a frontage of one-half rod, an 80-acre farm would front 40 rods, and if that were the average size 16 farms would front on each mile of the road. This does not seem exceedingly populous; but please think of some country roads within your knowledge where there are five houses within the mile, and then think of placing three families for every one, and you will have a very lively little neighborhood. Long and narrow farms are by no means so objectionable as they may at first thought seem. The wood lot may be reserved at the rear end of the farm, a permanent pasture if desired next to that, and in that case a common lane between adjoining farms would be needed, then come the cultivated fields.

If such extreme difference between length and breadth of farms be objected to, an 80-rod frontage might be adopted, which would allow an 80-acre farm to be one-half as broad as long, or a 160-acre farm one-fourth as broad as long,

and this would give eight families to the mile,—a far better number than most of our country roads can show. The last means is to adopt the European plan of locating the houses of the entire population of a given section, say of each school district, at a common center, from which each one goes out to his farm in the morning and returns in the evening.

Of course we need not adopt the features or go to the extremes which render the plan as practiced in Europe so objectionable. But the main idea may be accepted and carried out with American details. Thus in this village home each one may be allotted an acre of land, which if fronting 8 or 10 rods, will give 32 to 40 families along one-half mile of this street. This plan too has its objections,—serious ones,—and where much stock is kept it would be impracticable: but I submit that in many cases it would not be so, that on the contrary it is now successfully practiced in some parts of New England, that though attended with some disadvantages it offers the very perfection of delightful home and social life, and that it is well worthy serious consideration in every newly settled country.

The Committee on Exhibition of Fruit, through Mr. Elwanger, of Rochester, New York, then made the following report:

The committee report that they find a very good display of apples, embracing about 150 plates, as follows:

Mr. I. M. Selover, of Coldwater, has 8 named varieties,—4 plates Baldwin, 1 Bellflower, 1 Lady Sweet, 1 Green Sweet, 1 Red Winter Pearmain, 1 Red Canada, 1 Esopus Spitzenburg, 1 Swaar, 1 Rambo.

Mr. J. K. Lawrence, of California, Branch county, a fine collection, consisting of 2 plates Canada Red, 2 Seek-no-further, 2 Northern Spy, 2 Greening, 2 Pound Sweet, 2 Peck's Pleasant, 2 Golden Russet, very fine but deficient in flavor, 2 Baldwin.

Mr. Shirtz, of Oceana county, exhibited 8 varieties, among them a very fine and highly colored specimen of Hyslop Crab, 2 plates Baldwin, 2 Northern Spy, 1 Rhode Island Greening, 1 Golden Russet, 1 Seek-no-further, 1 Wagener.

The committee reported a fine collection from Wayne county, and among them were good specimens of Fallawater, Yellow Bellflower, and Northern Spy.

The Michigan Agricultural College exhibited 10 varieties,—1 plate Baldwin, 1 Wagener, 1 Talman Sweet, 1 Roxbury Russet, 1 Golden Russet, 1 Yellow Bellflower, 1 Westfield Seek-no-further, 1 Northern Spy, of high color, grown on trees in grass, 2 Northern Spy, grown on trees where the soil was cultivated, of less color than preceding, but much better and fairer apples, 1 Rhode Island Greening, 2 apples of natural fruit with a remarkable growth about the calyx.

L. L. Lance, of Ganges, offered a collection of about twenty varieties, among which were Talman Sweet, Mammoth Pippin, and Ben Davis.

Mr. Hanford, of Bristol, Indiana, showed 8 varieties highly colored. A good collection. 1 Plate Northern Spy, 1 King, 1 Hubbardston's Nonsuch, very fine, 1 Baldwin, 1 Smith's Cider, Crawford's Late, late, fine appearance but poor quality, 1 Long Pearmain, 1 Red Canada.

The Grand River Valley Horticultural Society exhibited 80 varieties of apples. Among them the Shiawassee Beauty, a handsome late fall apple, slightly like the Fancuse or Snow Apple, very handsome; the Rubicon, a firm apple of the Baldwin type, but with less color, very hardy and late keeper; the Jonathan, an apple deserving greater notice than it receives; and also the Yellow Bellflower.

Mr. Elwanger, in presenting the report, said that he had found that the highly colored fruit was not always best in quality, when on the same tree; upon different trees it depends upon the culture. So also the quality of large, overgrown fruit is not equal in quality to that of smaller or more average size. He called especial attention to the display of Northern Spy by the Agricultural College. The difference between the grass grown and cultivated was very marked, both in color and in the fairness of the fruit.

While this report was being read there were various interruptions, explaining

the different varieties. For instance, the Ben Davis was not looked upon as a desirable variety, while the Rubicon, mentioned above, was declared worthless. The Jonathan was highly recommended and was said to be very acceptable to hotel keepers in cities who wanted a not too large apple for table use. Growers were urged to cultivate more Talman Sweet and Green or Honey Sweet for baking purposes, as they were in much demand among city people.

Messrs. Elwanger and Barry were called out for remarks, and spoke briefly in a general way at the pleasure of being present at the meeting. In reply to a question, Mr. Barry said that the production of apples and pears was just in its infancy. The demand in the city for good fruit was not half supplied, and there was yet no danger of growing too much.

PEAR STATISTICS.

The following statement of receipts from six pear trees on the farm of Mrs. Alexander Cudner, of Girard, Branch county, Michigan was furnished the Society:

The trees were of the following varieties: One Bartlett, three Flemish Beauty two Onondaga. I don't know the time of setting positively, and have kept no account of the proceeds until within the last five years. Average size of tree about seven inches in diameter. I have sold from all the trees yearly as follows:

1872—27½ bushels, average price, \$2.....	\$55 00
1873—22 bushels, average price, \$1.85.....	40 70
1874—18 bushels, average price, \$1.75.....	31 50
1875—17½ bushels, average price, \$3.....	52 50
1876—17¼ bushels, average price, \$1.50.....	25 13
Total receipts for five years.....	\$204 83
Average receipts per year.....	40 96
Average receipts per year per tree.....	6 82

I have used in the family about two bushels yearly. The prices in the market have ranged about the same for the different varieties. The Flemish Beauty is the best bearer, the Onondaga next, and the Bartlett least.

The trees have received no care, standing in sod which has not been broken in twelve years. They are exposed to north, south, and west winds, protected on the east by buildings and an apple orchard. They have been healthy and vigorous until the season just passed, when the "blight" affected them slightly.

Thursday Morning.

The Society first made a visit, between eight and ten o'clock, to the Lewis' Art Gallery, on acceptance of an invitation from the proprietor. At ten o'clock the meeting was again called to order for its final session. The Secretary read an essay prepared by Mr. A. G. Gulley, of South Haven, entitled

A FEW ORNAMENTAL TREES.

This Society, while it has already taken under its charge, besides fruit growing, both vegetable and ornamental horticulture, has had but little brought before it on the latter subject. Persons wishing to plant ornamental trees are often at a loss to know which to choose from the long list that the nurseryman's catalogue presents, and either neglect planting or use only the native and well known varieties, or else rely on some agent to select who knows as little as themselves of the real value of the trees that he recommends, and they often get them unsuited for their purpose or locality. A few words, then, about the more desirable kinds may not be out of place. I shall not speak of the many native trees valuable for planting, yet the varieties I shall mention are not in-

tended to supersede them, for no variety yet introduced is better than our maple, elm, or linden, for street or general planting; but for small places, or special purposes, some of the introduced trees are preferable. I shall also omit the evergreens, although some of them should be in every collection, and speak only of a few of the newer varieties of deciduous trees intended for specimens, and used on account of the peculiarity of their growth, foliage or flowers, yet those that have been tried long enough to prove their value.

In the willow family, of which our common weeping, or *Babylonica* willow, is well known, there are several other valuable trees. The Rosemary willow is an upright grower, but is top-grafted where the head is desired. The limbs are long and slender, the leaves small and of a silvery color underneath, giving it a changable appearance when the wind blows. It does not usually exceed twelve feet in height, and occupies but little space. This tree is represented on page 101 in the Society's Report of 1874.

The new American willow has limbs and spray longer and finer than the last, and is a fine weeping tree; the leaves are small and not showy. It grows but little above where grafted, so takes but little room. It, like the last, bears trimming well, and can be made to take any desired shape. Both are easily transplanted, and adapt themselves to almost any soil.

The Kilmarnock willow cannot have too much said in its favor. This beautiful weeper, when well grown, is very attractive. It should be grafted about seven feet high, then severely cut back for several years, when it will assume a perfect umbrella shape, and each year send out shoots that will reach nearly or quite to the ground. The leaves are large and glossy, adding much to its appearance. Owing to the peculiar shape and small space occupied by this tree, it is especially adapted to small lawns, cemetery lots and other places of limited room.

The Ash family has several good varieties, of which I shall mention but two, the Golden Barked and the Weeping Ash. The first is one of the few very valuable for its beauty in the winter. It is an upright grower, with a foliage like the common ash, and during the summer, unless closely examined, does not especially attract attention, but after the leaves have fallen and the wood ripened, then its beauty shows forth, all the new growth having a bark of a bright gold color, and in striking contrast each limb is covered with large buds, for the next year, of a jet black color. It is an irregular grower and requires thinning to keep in shape; this also tends to make more new growth upon which the peculiarity of the tree is most noticeable. This a very hardy tree, going through the winter of 1874-75 in this State uninjured, although exposed and unprotected.

The Weeping Ash is rather a coarse, spreading grower, with limbs (except its weeping habit) and foliage like the common ash, upon which it is grafted. As with the other weeping trees, a better head is formed by trimming back pretty closely for a year or two. This tree should only be used in places of considerable size and among upright growers for variety. A good representation of this tree may be found in the Society's report for 1874, on page 107.

The Mountain Ash is well known, but there are two varieties worthy of special mention. First, the Weeping Mountain Ash, which is a large growing weeper. It should be budded eight or ten feet high to show its full beauty, then with proper trimming its head can be made to nearly fill the space to the ground. The berries hang on after the leaves have fallen, making it a showy tree even in the winter. This tree should not be planted where the borer is

very troublesome in the ordinary variety, for if they work in the trunk and kill it, it cannot be cut back like varieties budded at the surface.

The Oak-leaved Mountain Ash is a strong upright grower, usually budded at the ground on the common variety. It has a foliage in shape like the oak leaf, from which it takes its name. The difference is very marked when it is growing next the common or weeping variety. It naturally makes a good shaped head, requiring but little trimming. Its berries also hang on late, adding to its value.

Among the Poplars there are several used for planting, although but few are worthy of cultivation. They all grow rapidly, and may be planted where it is desired to have trees as soon as possible.

The Lombardy Poplar is too well known to need special description. Its peculiar manner of growth makes it desirable as a background for other trees. It is often planted in a group on a knoll or hill to give it greater apparent height, and it may be used in small places sometimes for variety, as it takes but little room. It is not desirable in windy countries, as along the lake shore, as it is liable to be broken and its beauty destroyed.

The Silver-leaved Poplar, although very ornamental, should never be planted, owing to its great propensity to sprout from the roots. Several other varieties of this family have the same objectionable feature.

The Weeping Poplar is very fine, and should be more grown. It requires considerable space, but not as much as the Weeping Ash, and it is a more graceful tree, as it grows faster. Like the Ash, it should be grafted eight or ten feet high. A picture of this tree is given on page 95, in the report of 1874.

There yet remains one tree that for grace and beauty exceeds all I have mentioned,—the Cut-leaved Weeping Birch. It is an upright grower and is budded at the ground, but the limbs, from the fineness of their spray, soon assume a weeping form, and these, covered with the beautiful cut-leaves, add still more to its beauty. This is still farther enhanced by the white bark on the trunk and large limbs, and makes it a very showy tree at all times of the year. When left to itself it naturally makes a tall slim tree, and then shows to the least advantage. If a spreading form is desired it readily assumes this by heading back, but usually it does best if but little trimmed. It is adapted to almost any place or position, is easily transplanted, and grows readily in any good soil. When this tree is better known I think it will be more generally planted.

There are two true Weeping Birches cultivated, but not yet tried enough for me to recommend them. Both are fine trees, and if they prove as good as they seem, will become popular. Cuts of these trees may be found in the report of 1874, pages 83 and 97.

Were it not for our hot summers, several trees with colored foliage would be desirable. The Purple-leaved Beech and Maple, the Blood-leaved Peach, and others are very showy when they first put out their scarlet or purple leaves in the spring, but the hot sun of summer changes them to almost the ordinary green, leaving but little of their former beauty. Yet, in a place of considerable extent, these trees add to the variety.

Some trees are valued for their flowers as well as foliage. The Magnolias are especially of this class. Some of them are covered with large, white, fragrant flowers before a leaf shows. All of this family are noted for their large showy leaves. Some of them are not quite hardy, but the *Acuminata*, *Tripetala*, *Conspicua*, and *Soulangeana*, which are the best varieties, can be relied on. They are a family of slow-growing trees, yet bloom when young, and

should only be moved when they are very small, as they are hard to transplant; yet they will repay all the extra care necessary to grow them.

The Horse Chestnut, when it has attained considerable age, is very showy when in bloom, especially the newer varieties of double white and red.

This list of trees given does not by any means contain all that are valuable for planting, but only a few of the more prominent, as those most called for. Elwanger & Barry, in their descriptive catalogue, give 25 varieties of Maple alone, and nearly as many of Ash. Thomas Meehan had on the Centennial grounds a plantation containing specimens of 750 varieties of trees and shrubs, of which fully one-third were trees. This shows the great amount of time and labor that has been spent in propagating and growing varieties desirable for ornamental purposes. We have mentioned a few of the best, and stated their peculiarities to aid those desirous of planting. We hope also to draw the attention of others to this branch of horticulture, as all must admit that planting of trees for ornamental purposes is much neglected by both farmer and fruit-grower: yet no investment they can make will in the end give greater returns or prove more satisfactory. And if a greater interest is awakened in this direction our object will be attained.

The Committee on Flowers then presented their report through Mr. Barry, of Rochester, N. Y., which is as follows:

Your committee appointed to examine and report on the plants placed on exhibition respectfully submit the following:

They find a beautiful specimen of pink flowering Begonia from Miss Berry. The plant is well grown, and full of flowers.

Mrs. S. S. Scovil exhibits a large and handsome plant of Myrtle.

A collection of Geraniums is shown from Mrs. Kellar.

From Mrs. Chas. Upson are handsome specimen plants of "Holly Wreath" Ivy-leaved Geranium, small white flowering Begonia; also a pretty plant of Begonia Rex. This portion of the display is especially creditable.

Mrs. Parrish shows plants of Primrose and Double Feverfew.

Mr. J. H. D. Warren sends an interesting collection of Ferns as well as plants, Peppermint-scented Geranium, and Begonia.

Mrs. Wm. Rowe, a cross made of Green Moss.

A large and handsome plant of *Fatigium grande* is exhibited by Mrs. A. T. Lanphere. This plant is a native of Japan and China, and is very ornamental either in the conservatory or out of doors. The specimen exhibited deserves special commendation.

Hon. J. H. McGowan shows a fine specimen of the alba plena Camellia in full flower; also very nice well grown specimens of Ivy-leaved Geranium *L'eglante*, Cactus and Begonia.

The Committee on Miscellaneous Fruits and other articles then reported through Mr. C. A. Ilgenfritz as follows:

The Committee on Miscellaneous Fruits and other articles would report on exhibition:

Of grapes, 2 plates Rogers No. 15 (Agawam) and 1 bunch Rogers No. 1 (Goethe) by Mr. Gould. The plates of Agawam showed plainly the features of the variety; productive, but with small, ill-shaped bunches. The berries were fair in size, but lacking in flavor and uniformity.

The Grand River Valley Horticultural Society exhibited a dish of Isabella grapes grown by Mr. Rowe, of Kent Co. They were fair in appearance, but exhibited the peculiar and medicine-like flavor of the variety.

Mr. M. B. Bateham exhibited a magnificent plate of Catawbas grown by Mr. A. R. Hunt, of Euclid (Lake Shore), Ohio. The bunches were large, compact and well formed; the berries plump and bright, and the flavor delicious.

Mr. S. B. Mann, Secretary of the Farmers' Fruit Preserving Co., of Adrian, showed some fine specimen papers of dried King of Tompkins Co. and Surprise apples, and also dried squash and pumpkin flour in pound packages. They use the Alden process, and the specimens could hardly have been finer. The apples had preserved perfectly their original color and flavor.

We learn that this company has thus far consumed 25,000 bushels of apples this year, thus by their enterprise opening a wide and constant market for the orchardists of their region.

Mr. M. B. Bateham, Mr. E. Bradfield, and Prof. W. J. Beal had been asked by some parties to present to the Society seven varieties of grapes which they would recommend to the general grower. They were each to make a list without consulting each other. The result was as follows:

Mr. Bateham's List.—Lady (white), Eumelan, Hartford, Delaware, Concord, Salem, or Agawam, Iona, and then added as an eighth, Catawba.

Mr. Bradfield's List.—Adirondac, Concord, Hartford, Isabella, Delaware, Iona, Clinton.

Prof. Beal's List.—Concord, Agawam, Delaware, Clinton, Hartford, Adirondac, and Iona.

From these lists it will be seen there are four varieties mentioned by all, viz.: Concord, Delaware, Hartford, Iona.

The Treasurer then made a brief report, showing the amount on hand in the treasury to be \$336.05.

The Society then chose one delegate to attend the annual meeting of the Ohio Horticultural Society and one to attend that of the Western N. Y. Horticultural Society. Mr. C. W. Garfield, of the Agricultural College, was chosen delegate to the former, and Mr. H. Dale Adams to the latter meeting.

Mr. Bateham, of Ohio, then by request gave a short address upon

PLUM CULTURE AND THE CURCULIO.

He stated that from the best information, there were now planted in orchard form in Ohio about 150,000 plum trees. About two-thirds of these orchards, or 100,000 trees, are located in five or six counties in the southwestern quarter of the State,—adjacent to Cincinnati; and the majority are of the Damsion variety, with perhaps one-fourth Wild Goose, and other varieties of the Chickasaw family. The other 50,000 trees are of the European class of plums, including the German Prune, Lombard, Orleans, Jefferson, Yellow Egg, Imperial Gage, Reine, Claude, etc.; a majority of these orchards being in the northern half of the State, but some of them also in southern counties. The planting of Damsons has been going on quite actively for ten or more years past; but more especially the past three to five years; and of the finer plums most of the planting has been done within three years, but the chief stimulus was given by the success of a few orchards that had already come into bearing, and by which it was shown that the curculio could be easily and cheaply combated, on a large scale, by the well known jarring and catching process, with the proper apparatus. For the past two years the plum crops have generally failed, in consequence of late frosts in spring; and this has had the effect to check planting, which was otherwise likely to be overdone.

Most of the Damsons are of the Shropshire variety, as it is found preferable to the others. The trees are propagated by grafting or budding on to seedling peach roots, quite down to the ground. The union of the wood seems to be perfect, and the growth and productiveness all that can be desired. If planted a good depth, the plum usually puts out roots of its own, and thus all doubts are removed about durability. The oldest trees of this character in Ohio have been planted nearly 20 years, and seem as healthy as any on original plum roots. Trees of the Wild Goose and Chickasaw varieties are now propagated in the same way, and planters say they would as soon have them as any grown on

plum roots. They are more uniformly thrifty from the start, and of course are sold cheaper.

The form of the curculio-catcher most approved is, I think, a Michigan invention somewhat improved. It is a light frame work in the shape of a wide hopper, covered with oil-cloth, and mounted on two light wheels, like a hand-cart. It has an opening on one side to admit the body of the tree, and a tin box or drawer at the bottom to receive and hold the beetles till it is convenient to cremate them. The jarring is done by means of an implement resembling a stout crutch, six feet in length, which is carried on top of the catcher, and is operated by the man who works the machine,—this being found more economical than to hire a second hand for the purpose. One man, after a little practice, can operate on 300 trees in an hour. The process has to be commenced as soon as the blossoms begin to fade, and performed every day, or twice a day when the insects are numerous, for three or four weeks. But the cost of the labor is small compared with the value of the crop, when there are several thousand trees in bearing, so as to make it an object to give them regular attention.

At this juncture the following preamble and resolution were submitted by Mr. E. Bradfield, and supported by Prof. W. J. Beal:

WHEREAS, The Society did by its vote yesterday refuse to adopt a name recognizing anything but the cultivation of fruit; therefore,

Resolved, That all premiums not connected with the culture of fruit be stricken from the premium list of the Society.

On motion, the resolution was referred to the Executive committee.

The following communication was read by the Secretary:

The State Pomological Society is hereby cordially invited to hold its next annual session at Grand Rapids.

C. N. MERRIMAN, *Pres.*,

WM. ROWE,

E. BRADFIELD,

For the G. R. V. Horticultural Society.

On motion, the invitation was laid upon the table until next meeting.

The committee on resolutions reported as follows through its chairman, H. G. Reynolds of Grand Traverse:

The report was unanimously adopted by a rising vote.

Your committee were appointed, I believe, to give some expression in words of the sense of obligation which the society feel to the many friends of Coldwater; but we find these friends and their various offices so numerous, that were we to fulfill the half of our commission this short session would be all too brief for our report. We have, therefore, condensed it even at the risk of omissions, and would offer the following for your consideration:

Resolved, That this Society would express their cordial appreciation of the hearty reception accorded us by the hospitable citizens of Coldwater, and especially extend our thanks to those kind friends who have opened their homes for our reception and lent their time and efforts for our entertainment.

To each of the gentlemen and their families with whom members of the Society have been guests we desire individually and collectively to express our thanks and the hope that they will not long suffer the favors to be all upon one side; but that at future meetings of the Society, and at other times, we in our various homes may have the pleasure of receiving them.

To the Branch County Pomological and Horticultural Society we especially express our obligation for the use of this most convenient hall. To the ladies and gentlemen who so charmingly added to the pleasure of our session with music; and to those whose plants and fruits decorate the hall; to that gentleman whom our friends wisely placed as the chief of our City Fathers, Dr. Cutter, for his hearty welcome; and to him who has so well bestowed his wealth for the pleasure and education of his fortunate fellow citizens, to Mr. H. C. Lewis, who so courteously favored us with the rich art treat which his gallery affords; to these, and to all others whom we have met,

for all have continually sought opportunity to add to our pleasure, we wish to express our thanks. Gentlemen and ladies, we can do no more, but we assure you the thanks are genuine.

We also desire to express the surprise and pleasure which we felt in examining that admirable illustration of the wise forethought of our State Government,—the State school for indigent children. We cannot express too strongly our sense of the value and importance of this institution to the welfare of the State. Thin, indeed, would be the population of our penitentiary if Mr. Alden could but have the training of those who would otherwise become its occupants. We were only pained to learn that many children have to be refused admission for want of room.

Finally do we desire to express the gratification afforded us by the presence of distinguished representatives of the pomology of other States. Messrs. Ellwanger and Barry of the Western New York Horticultural Society, and Mr. M. B. Bateham, Secretary of the Ohio Horticultural Society, have all added very largely to the interest and value of our sessions, and have rendered most valuable service in our committee work. We would also acknowledge the reception from the first gentleman of some fine illustrations of fruit.

The Society then adjourned *sine die*.

FINANCIAL REPORT OF 1876.

TREASURER'S STATEMENT.

To the President and Gentlemen of the Executive Committee of the State Pomological Society:

In rendering an account of my stewardship, it seems proper that I should extend to you all my heartfelt thanks for the many acts of kindness and practical advice that have been extended to me on all occasions, and especially in connection with the duties of my office. The business relations with you all have been of the most cordial and satisfactory kind to myself, and have rendered the duties of my position a pleasure which, I trust, I fully appreciate.

On assuming the duties of Treasurer of your Society, Jan. 1st, 1876, I received from the hands of my predecessor the sum of \$6.00 as the full amount remaining in his hands at the close of his official term. There remained unpaid the following bills:—\$18.00 due the Jackson Citizen office for printing, etc., and \$11.60 due J. A. Robinson for expenses as member of orchard committee, and for which orders had been drawn, making a total of \$29.60; take from \$6.00 the amount received from former Treasurer, leaving an indebtedness of \$23.60 to commence with. We were also in debt to the Life Membership Fund the sum of \$320.00, there being 132 life members at \$10.00 each, making a fund of \$1,320.00, against which we held a voucher for only \$1,000.00 invested by the late Treasurer.

The following will be found a summary of receipts and expenditures for the year:

RECEIPTS.

Received from former Treasurer.....	\$6 00
“ “ State Agricultural Society (general fund).....	1,500 00
“ interest on deposit in Savings Bank.....	1 50
“ “ mortgage.....	100 00
“ from James Vick for “ Vick's Special Floral Premiums”.....	40 00
“ “ 10 Life Members.....	100 00
“ “ Allegan Co. Pomological Society (donated premium).....	15 00
“ “ 44 Annual Members.....	44 00
“ “ 2 Life Members.....	20 00
“ “ Gov. Bagley on account of Chicago Exposition.....	42 00
Total.....	<u>\$1,868 50</u>

FINANCIAL REPORT.

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EXPENDITURES.

Checks paid during the year.....	\$1,361 49
Paid indebtedness to Life Membership Fund.....	320 00
Memberships added.....	20 00
Total.....	<u>\$1,701 49</u>

GROSS RECEIPTS AND EXPENDITURES FOR 1876.

Receipts.....	\$1,868 50
Expenditures.....	1,699 09
Balance in my hands Jan. 1, 1877.....	<u>\$169 41</u>

H. DALE ADAMS, *Treasurer.*

TABULATED STATEMENT OF DISBURSEMENTS.

The summary which follows of the expenditures for 1876, from the vouchers in the hands of the Secretary and Treasurer, may be of interest to the members of the Society.

EXPENSES OF EXECUTIVE COMMITTEE.

T. T. Lyon, expenses to Lansing meeting.....	\$9 25
N. Chilson, " " ".....	3 70
D. R. Waters, " " ".....	2 65
Board of Executive Committee at Detroit, June meeting.....	5 10
Incidental expenses June meeting.....	4 75
A. J. Cook, expenses Coldwater meeting.....	5 50
E. H. Reynolds, expenses Coldwater meeting.....	10 36
N. Chilson, Jackson and Detroit Meeting.....	6 70
Total.....	<u>\$48 01</u>

OLD DEBTS PAID.

Debt to Life Membership Fund.....	\$320 00
D. R. Waters, chairman orchard committee, 1875.....	9 95
Jackson Citizen, printing, 1875.....	18 00
J. A. Robinson, orchard committee, 1875.....	11 60
Total.....	<u>\$359 55</u>

CENTENNIAL EXPENSES.

E. Bradfield and H. Dale Adams, expenses as representatives of Pomological Society and State Centennial Commission (Fruit Department), for Centennial Exhibition, Philadelphia.....	\$127 99
I. E. Ilgenfritz, Pear collection for Centennial exhibit.....	15 00
N. Chilson, Apple collection (May exhibit) Centennial exhibit.....	13 90
J. G. Ramsdell, Plum collection for Centennial exhibit.....	12 00
Total.....	<u>\$168 89</u>

CURRENT EXPENSES.

A. J. Cook, as Superintendent Apple Department, State Fair.....	\$35 25
B. Rice, watchman, State Fair.....	20 00
James Cox, Assistant Secretary, at State Fair.....	20 00
Board of officers at State Fair.....	43 80
Printing, freight, and express, at State Fair.....	39 29
Freight paid State Agricultural Society, at State Fair.....	2 40
Mrs. R. G. Hain, clerk, State Fair.....	6 75
Telegraphing.....	5 08
Prints for fruit, State Fair.....	56 05
Total.....	<u>\$228 62</u>

SECRETARY'S OFFICE.

Salary for the year.....	\$600 00
Traveling expenses.....	18 79
Postage.....	25 01
Expenses of substitute at Coldwater meeting.....	4 00
Freight, express, etc.....	13 63
Total.....	<u>\$661 43</u>

TREASURER'S OFFICE.

Compensation for extra service.....	\$50 00
General expense of office for the year.....	55 45
Stationery for President and Treasurer.....	8 13
Expenses, Coldwater meeting.....	8 55
Freight and express, Coldwater meeting.....	5 87
Total.....	<u>\$128 00</u>

PREMIUMS.

For best Centennial floral design, Detroit meeting.....	\$5 00
Total.....	<u>\$5 00</u>

INCIDENTAL EXPENSES.

Engraving diploma awarded Michigan State Pomological Society by Indiana State Board of Agriculture at Indianapolis.....	\$15 00
Cuts for report of medal received at Chicago.....	16 00
Printing, W. S. George & Co.....	5 00
Boxing and cartage on Reports.....	34 45
Expenses of committee to meet State Agricultural Society at Jackson.....	6 89
Printing check books.....	2 25
Total.....	<u>\$79 59</u>

RECAPITULATION.

Expenses of Executive Committee.....	\$48 01
Paid old debts of 1875.....	359 55
Centennial expenses.....	168 89
Secretary's office.....	661 43
Treasurer's office.....	128 00
Current expenses.....	228 62
Premiums paid.....	5 00
Incidental expenses.....	79 59
Paid Life Membership Fund.....	20 00
Total.....	<u>\$1,699 09</u>

STATE AGRICULTURAL SOCIETY.

By an arrangement with the State Agricultural Society, our own Society received from them the following appropriations:

For Pomological premiums paid at fair.....	\$1,000 00
For general expenses.....	1,500 00
Total.....	<u>\$2,500 00</u>

The cash for the premiums did not come into the hands of the Treasurer of the Pomological Society. The premiums were paid by sight checks on the Treasurer of the Agricultural Society, drawn by our Secretary. This system of paying the premiums of the Society seems to have given entire satisfaction since

its adoption, and so long as it continues thus to work so well, it is best not to change the practice.

LIFE MEMBERSHIP FUND.

The permanent fund of the Society now amounts to \$1,320.00, all of which is now invested and drawing interest at the rate of ten per cent. per annum.

H. DALE ADAMS, *Treasurer*.

Dated Galesburg, January 1, 1877.

STATE FAIR, 1876.

HELD AT JACKSON IN SEPTEMBER.

As will be seen by the register of entries, this was one of the largest fairs of fruits and flowers ever held in the State. The hall, though most tastefully decorated and trimmed in a most beautiful and artistic manner, was wholly inadequate in space and light for the occasion. The large, costly, and truly grand collection of plants made by Mr. Cooley, of Jackson, was consequently placed in the new and spacious Fine Art Hall, where it formed the marked and splendid feature of the fair. The Van Haften collection of flowers from Kalamazoo, was also most tastefully arranged in the new hall. The magnificent collection of plants and flowers made by Mr. Hibbard, were placed in the center of the old hall, where they attracted thousands by their lovely beauty and fragrance. Mrs. Andrews also had there a few rare and beautiful plants.

In the pomological exhibition, the great feature of the occasion was the display of fruits under Prof. Cook and his assistants. No such instructive exhibition has ever before been attempted in this State. It will thus be seen that the fruit and flower fair for the centennial year was in our own State an unexpected success to many. The appropriation of \$1,000 made by the State Agricultural Society was fortunately large enough to pay all premiums. The amount of premiums awarded did not exceed the appropriation, and all were promptly paid. Checks were issued on Saturday, the last day of the fair week, for nearly every premium. The only adverse comment that can be made in regard to the fair was the lack of attendance on the part of some of the officers of the society. It was unfortunate that the flower department had no head, more unfortunate that the grand display of canned fruits by the ladies of the State had no Superintendent to give it proper space and place. Two members of the Executive Committee, Messrs. Chilson and Cook, were obliged to do double duty, while Treasurer Adams was obliged to neglect his own duties to the receiving and placing of fruit, and Superintendent Webber was called upon to act in a half-a-dozen capacities at one and the same time.

We have only to add that it is simply impossible to make a successful fair upon any such principle or division of labor. There must be order, system, and a head to every division or department. When exhibitors put themselves to the trouble of bringing apples, grapes, pears, peaches, dried, canned or preserved fruits, or flowers, they should be met promptly and cordially by a Superintendent of each of these divisions, and by one who knows where each article should be placed. The following is the

REGISTER OF ENTRIES:

FRUITS AND FLOWERS.

DATE OF ENTRY.	DIV.	Class.	No.	ARTICLE.	BY WHOM ENTERED.	P. O. ADDRESS AND REMARKS.
Sept. 14.	B.	1	1	County collec'n of Apples (Calhoun County).....	C. P. Chidester.....	Bellevue, Mich.
" 14.	C.	1	2	Township collection of Apples (Convis Tp., Calhoun County).....	"	"
" 14.	D.	1	3	Col. of Fruit grown by exhibitor.....	"	"
" 14.	E.	1	4	Collection of Apples grown by exhibitor.....	"	"
" 14.	"	5	5	Plate Maiden's Blush.....	"	"
" 14.	"	7	6	" Large Yellow Bough.....	"	"
" 14.	"	10	7	" Early Strawberry.....	"	"
" 14.	"	11	8	" Early Joe.....	"	"
" 14.	"	13	9	" Lowell (Greasy Pippin).....	"	"
" 14.	"	16	10	" Twenty Ounce (Cayuga Redstreak).....	"	"
" 14.	"	17	11	Plate Chenango Strawberry.....	"	"
" 14.	"	18	12	" Hawley.....	"	"
" 14.	"	22	13	" Fall Pippin.....	"	"
" 14.	"	27	14	" Autumn Swaar.....	"	"
" 14.	"	28	15	" Jonathan.....	"	"
" 14.	"	29	16	" Peck's Pleasant.....	"	"
" 14.	"	30	17	" Rhode Island Greening.....	"	"
" 14.	"	31	18	" Baldwin.....	"	"
" 14.	"	32	19	" Red Canada.....	"	"
" 14.	"	33	20	" Golden Russet.....	"	"
" 14.	"	34	21	" Roxbury Russet.....	"	"
" 14.	"	35	22	" Wagener.....	"	"
" 14.	"	36	23	" Northern Spy.....	"	"
" 14.	"	37	24	" Belmont.....	"	"
" 14.	"	38	25	" Fameuse (Snow).....	"	"
" 14.	"	39	26	" Bailey Sweet.....	"	"
" 14.	"	40	27	" Westfield Seek-No-Further.....	"	"
" 14.	"	41	28	" Hubbardston Nonsuch.....	"	"
" 14.	"	42	29	" King of Tompkins Co.....	"	"
" 14.	"	43	30	" Yellow Bellflower.....	"	"
" 14.	"	44	31	" Tallman Sweet.....	"	"
" 14.	"	45	32	" Ladies' Sweet.....	"	"
" 14.	"	48	33	" Swaar.....	"	"
" 14.	"	49	34	" Esopus Spitzenburg.....	"	"
" 14.	"	50	35	" Melon.....	"	"
" 14.	II.	18	36	" Grapes (for name).....	Mrs. R. M. Cook.....	Charlotte, Eaton County.
" 14.	K.	3	37	Collection domestic Dried Fruit.....	"	"
" 14.	L.	2	38	Col. Canned and Pickled Fruit.....	"	"
" 14.	M.	1	39	" Preserved Fruit and Jellies.....	"	"
" 14.	"	2	40	Cider Apple sauce.....	"	"
" 14.	"	28	41	Apple Butter.....	"	"
" 14.	S.	1	42	Collection Verbenas.....	"	"
" 14.	"	9	43	" Petunias.....	"	"
" 14.	"	10	44	" Asters.....	"	"
" 14.	"	12	45	" Pansies.....	"	"
" 14.	"	16	46	Display Hollyhocks.....	"	"
" 14.	"	17	47	" Zenias.....	"	"
" 14.	"	18	48	Col. display Everlast'g Flowers.....	"	"
" 14.	"	20	49	" Coxcombs.....	"	"
" 14.	"	21	50	" Phlox Drummondii.....	"	"
" 14.	"	23	51	" Ornament'l Grasses.....	"	"
" 14.	T.	4	52	Small Floral Design.....	"	"
" 14.	"	8	53	Bouquet Dried Grasses and Flowers.....	"	"
" 14.	"	10	54	Flat Bouquet.....	"	"
" 14.	"	11	55	Pair Round Bouquets.....	"	"
" 14.	"	12	56	Vase Cut Flowers.....	"	"
" 14.	V.	Spec'l	57	Collection Cut Flowers.....	"	"
" 14.	"	Spec'l	58	Floral Design.....	"	"
" 14.	N.	16	59	Bottled Cider.....	Daniel F. Vickery.....	"
" 14.	"	17	60	Boiled Cider.....	"	"
" 14.	U.	5	61	Flower Stand of Wood.....	"	"
" 14.	P.	1	62	Collect'n Stove plants exhibited by one person.....	E. H. Cooley.....	Jackson.
" 14.	"	2	63	Collection Caladiums.....	"	"
" 14.	"	3	64	" Dracenas.....	"	"
" 14.	"	6	65	Specimen plant Caladium.....	"	"
" 14.	"	7	66	" " Dracenas.....	"	"
" 14.	"	10	67	" " Anthurium.....	"	"
" 14.	"	11	68	" " Cissus.....	"	"
" 14.	"	13	69	" " Croton.....	"	"
" 14.	"	16	70	" Sanchezia Nobilis.....	"	"

REGISTER OF ENTRIES—CONTINUED.

DATE OF ENTRY.	Div.	Class.	No.	ARTICLE.	BY WHOM ENTERED.	P. O. ADDRESS AND REMARKS.
Sept. 16.	P.	17	71	Specimen not included.....	E. H. Cooley.....	Jackson.
" 16.	Q.	1	72	Collection and display Green-house plants.....	".....	"
" 16.	"	3	73	Collection of Roses.....	".....	"
" 16.	"	6	74	Col. Colored Foliage Plants.....	".....	"
" 16.	"	13	75	Specimen Plant Abutilon.....	".....	"
" 16.	"	17	76	" " Calla.....	".....	"
" 16.	"	24	77	" " Tuberosa.....	".....	"
" 16.	"	25	78	Collection of Palms.....	".....	"
" 16.	"	26	79	" " Ferns.....	".....	"
" 16.	"	27	80	" " Lycopodiums.....	".....	"
" 16.	"	31	81	Specimen Plant not included.....	".....	"
" 16.	R.	1	82	Collection House Plants.....	".....	"
" 16.	"	9	83	Specimen Plant Agapanthus.....	".....	"
" 16.	"	13	84	Spec. Plant Nerium (Oleander).....	".....	"
" 16.	"	19	85	Any other species without glass.....	".....	"
" 16.	"	20	86	Collection Native Ferns.....	".....	"
" 16.	"	21	87	Window garden filled.....	".....	"
" 16.	"	22	88	Hanging basket filled.....	".....	"
" 16.	S.	1	89	Col. and display of Verbenas.....	".....	"
" 16.	"	6	90	" " " Lantanas.....	".....	"
" 16.	"	8	91	" " " " Hardy Roses.....	".....	"
" 16.	"	9	92	" " " " Petunias.....	".....	"
" 16.	"	10	93	" " " " Asters.....	".....	"
" 16.	"	11	94	" " " " Dianthus.....	".....	"
" 16.	T.	4	95	Small Floral Design.....	".....	"
" 16.	"	7	96	Basket of Flowers for table.....	".....	"
" 16.	"	10	97	Flat Bouquet.....	".....	"
" 16.	"	11	98	Pair Round Bouquets.....	".....	"
" 16.	"	12	99	Vase of Cut Flowers.....	".....	"
" 16.	"	13	100	Dish or Basket Cut Flowers.....	".....	"
" 16.	V.	1	101	Plants of all descriptions.....	".....	"
" 16.	F.	28	102	Name: Pears for name.....	C. P. Chidester.....	Bellevue.
" 16.	G.	21	103	Plate Seedling Peaches.....	".....	"
" 16.	"	21	104	Plate Seedling Peaches.....	".....	"
" 16.	Q.	14	105	Specimen Aloysia Cetriodoria.....	E. H. Cooley.....	Jackson.
" 16.	K.	3	106	Col. Domestic Dried Fruit.....	Mrs. L. C. Lincoln.....	Greenville.
" 16.	"	4	107	Dried Apples.....	".....	"
" 16.	"	6	108	" Peaches.....	".....	"
" 16.	"	8	109	" Cherries.....	".....	"
" 16.	"	9	110	" Strawberries.....	".....	"
" 16.	"	10	111	" Raspberries.....	".....	"
" 16.	"	11	112	" Blackberries.....	".....	"
" 16.	"	12	113	" Whortleberries.....	".....	"
" 16.	"	14	114	" Currants.....	".....	"
" 16.	"	15	115	" Gooseberries.....	".....	"
" 16.	"	18	116	" Pumpkins.....	".....	"
" 16.	"	22	117	" Crab Apples.....	".....	"
" 16.	"	23	118	" Tomatoes.....	".....	"
" 16.	"	29	119	" Beans.....	".....	"
" 16.	L.	2	120	Collection Domestic Canned and Pickled Fruit.....	".....	"
" 16.	"	3	121	Canned Apples.....	".....	"
" 16.	"	7	122	" Cherries.....	".....	"
" 16.	"	8	123	" Crab Apples.....	".....	"
" 16.	"	9	124	" Strawberries.....	".....	"
" 16.	"	10	125	" Raspberries.....	".....	"
" 16.	"	11	126	" Blackberries.....	".....	"
" 16.	"	12	127	" Whortleberries.....	".....	"
" 16.	"	14	128	" Gooseberries.....	".....	"
" 16.	"	15	129	" Currants.....	".....	"
" 16.	"	16	130	" Pieplant.....	".....	"
" 16.	"	5	131	" Peaches.....	".....	"
" 16.	"	18	132	" Tomatoes.....	".....	"
" 16.	"	22	133	Pickled Crab Apples.....	".....	"
" 16.	"	23	134	" Cherries.....	".....	"
" 16.	"	24	135	" Beans.....	".....	"
" 16.	M.	1	136	Collection Preserved Fruits and Jellies.....	".....	"
" 16.	"	4	137	Preserved Peaches.....	".....	"
" 16.	"	5	138	" Plums.....	".....	"
" 16.	"	6	139	" Cherries.....	".....	"
" 16.	"	7	140	" Strawberries.....	".....	"
" 16.	"	8	141	" Raspberries.....	".....	"
" 16.	"	9	142	" Blackberries.....	".....	"
" 16.	"	10	143	" Whortleberries.....	".....	"
" 16.	"	12	144	" Currants.....	".....	"

REGISTER OF ENTRIES—CONTINUED.

DATE OF ENTRY.	Div.	Class.	No.	ARTICLE.	BY WHOM ENTERED.	P. O. ADDRESS AND REMARKS.
Sept. 16.	M.	13	145	Preserved Gooseberries.....	Mrs. L. C. Lincoln.....	Greenville.
" 16.	"	14	146	" Grapes.....	"	"
" 16.	"	15	147	" Crab Apples.....	"	"
" 16.	"	16	148	" Tomatoes.....	"	"
" 16.	"	18	149	Collection of Jellies.....	"	"
" 16.	"	19	150	Currant Jelly.....	"	"
" 16.	"	20	151	Apple Jelly.....	"	"
" 16.	"	21	152	Siberian Crab Jelly.....	"	"
" 16.	"	22	153	Grape Jelly.....	"	"
" 16.	"	23	154	Raspberry Jelly.....	"	"
" 16.	"	24	155	Blackberry Jelly.....	"	"
" 16.	"	25	156	Pieplant Jelly.....	"	"
" 16.	"	27	157	Tomato Jelly.....	"	"
" 16.	"	3	158	Preserved Pears.....	"	"
" 16.	S.	1	159	Col. of Verbenas.....	"	"
" 16.	"	6	160	" Lantanas.....	"	"
" 16.	"	9	161	" Petunias.....	"	"
" 16.	"	17	162	" Zenias.....	"	"
" 16.	"	18	163	" Everlasting Flowers.....	"	"
" 16.	"	21	164	" Philox Drummondii.....	"	"
" 16.	"	22	165	" Antirrhinum.....	"	"
" 16.	"	23	166	" Ornamental Grasses.....	"	"
" 16.	T.	8	167	Bouquet of Dried Grasses and Flowers.....	"	"
" 16.	Vick's	Spec'l	168	Collection of Cut Flowers.....	"	"
" 16.	N.	1	169	Collection of American Wines.....	Steuben Co. Wine Co.....	Jackson.
" 16.	"	8	170	Isabella Wine.....	"	"
" 16.	"	9	171	Iona Wine.....	"	"
" 16.	S.	9	172	Collection and display Petunias.....	Nelly C. Jenkins.....	"
" 16.	"	17	173	" " Zenias.....	"	"
" 16.	T.	4	174	Small Floral Design.....	"	"
" 16.	"	11	175	Pair Round Bouquets.....	"	"
" 16.	L.	5	176	Canned Peaches.....	"	"
" 16.	Vick's	Spec'l	177	Floral Design by a Lady Amateur.....	"	"
" 16.	B.	1	178	Jackson County Col. of Apples.....	H. W. Doney.....	"
" 16.	L.	7	179	Canned Cherries.....	"	"
" 16.	K.	4	180	" Bartlett Pears.....	"	"
" 16.	"	5	181	" Peaches.....	"	"
" 16.	F.	12	182	Plate Flemish Beauty.....	"	"
" 16.	"	10	183	" Bartlett.....	"	"
" 16.	"	13	184	" Seckel.....	"	"
" 16.	"	25	185	" Winter Nelis.....	"	"
" 16.	"	14	186	" Onondago.....	"	"
" 16.	D.	1	187	Col. Fruit grown by exhibitor.....	D. H. Ranney.....	"
" 16.	M.	16	188	Preserved Tomatoes.....	Mrs. L. Eggleston.....	"
" 16.	"	17	189	" Citron.....	"	"
" 16.	"	18	190	Collection of Jellies.....	"	"
" 16.	"	19	191	Currant Jelly.....	"	"
" 16.	"	20	192	Apple Jelly.....	"	"
" 16.	"	21	193	Siberian Crab Jelly.....	"	"
" 16.	"	22	194	Grape Jelly.....	"	"
" 16.	"	26	195	Quince Jelly.....	"	"
" 16.	"	27	196	Tomato Jelly.....	"	"
" 16.	"	28	197	Apple Butter.....	"	"
" 16.	L.	2	198	Collection domestic canned and pickled fruit.....	"	"
" 16.	"	3	199	Canned Apples.....	"	"
" 16.	"	4	200	" Pears.....	"	"
" 16.	"	5	201	" Peaches.....	"	"
" 16.	"	6	202	" Plums.....	"	"
" 16.	"	7	203	" Cherries.....	"	"
" 16.	"	8	204	" Siberian Apples.....	"	"
" 16.	"	17	205	" Grapes.....	"	"
" 16.	"	18	206	" Tomatoes.....	"	"
" 16.	M.	1	207	Col. Preserved fruits and jellies.....	"	"
" 16.	"	3	208	Preserved Pears.....	"	"
" 16.	"	4	209	" Peaches.....	"	"
" 16.	"	5	210	" Plums.....	"	"
" 16.	"	6	211	" Cherries.....	"	"
" 16.	"	11	212	" Quinces.....	"	"
" 16.	"	14	213	" Grapes.....	"	"
" 16.	"	15	214	" Crab Apples.....	"	"
" 16.	L.	17	215	Canned Grapes.....	Mrs. M. W. Clark.....	"
" 16.	"	21	216	Pickled Peaches.....	"	"
" 16.	M.	28	217	Apple Butter.....	"	"
" 16.	L.	6	218	Canned Plums.....	"	"
" 16.	"	5	219	" Peaches.....	"	"

REGISTER OF ENTRIES—CONTINUED.

DATE OF ENTRY.	Div.	Class.	No.	ARTICLE.	BY WHOM ENTERED.	P. O. ADDRESS AND REMARKS.
Sept. 16.	J.	11	220	Canned Blackberries.....	Mrs. M. W. Clark.....	Jackson.
" 16.	"	3	221	" Apples.....	"	"
" 16.	"	9	222	" Strawberries.....	"	"
" 16.	"	14	223	" Gooseberries.....	"	"
" 16.	"	10	224	" Red Raspberries.....	"	"
" 16.	"	10	225	" Black Raspberries.....	"	"
" 16.	"	7	226	" Red Cherries.....	"	"
" 16.	"	16	227	" Pieplant.....	"	"
" 16.	"	15	228	" Red Currants.....	"	"
" 16.	"	5	229	" Yellow Peaches.....	"	"
" 16.	"	19	230	" Corn.....	"	"
" 16.	"	12	231	" Whortieberries.....	"	"
" 16.	"	7	232	" White Cherries.....	"	"
" 16.	"	15	233	" Green Currants.....	"	"
" 16.	"	15	234	" White Currants.....	"	"
" 16.	"	Spec'l	235	" Pumpkin.....	"	"
" 16.	"	Spec'l	236	" Lima Beans.....	"	"
" 16.	"	18	237	" Tomatoes.....	"	"
" 16.	"	3	238	" Apples.....	"	"
" 16.	"	11	239	" Lawton Blackberry.....	"	"
" 16.	"	6	240	" Green Gage Plums.....	"	"
" 16.	"	Spec'l	241	" Pickles.....	"	"
" 16.	"	Spec'l	242	" Catsup.....	"	"
" 16.	M.	25	243	Blue Plum Jelly.....	"	"
" 16.	"	19	244	Red Currant Jelly.....	"	Jackson.
" 16.	"	19	245	White Currant Jelly.....	"	"
" 16.	"	25	246	Peach Jelly.....	"	"
" 16.	"	25	247	Strawberry Jelly.....	"	"
" 16.	"	27	248	Tomato Jelly.....	"	"
" 16.	"	25	249	Pieplant Jelly.....	"	"
" 16.	"	25	250	Pear Jelly.....	"	"
" 16.	"	22	251	Grape Jelly.....	"	"
" 16.	"	21	252	Crab Apple Jelly.....	"	"
" 16.	"	25	253	Citron Jelly.....	"	"
" 16.	"	20	254	Apple Jelly.....	"	"
" 16.	"	25	255	Green Plum Jelly.....	"	"
" 16.	"	12	256	Preserved Currants.....	"	"
" 16.	"	7	257	" Strawberries.....	"	"
" 16.	"	9	258	" Blackberries.....	"	"
" 16.	"	8	259	" Black Raspberries.....	"	"
" 16.	"	3	260	" Pears.....	"	"
" 16.	"	5	261	" Blue Plums.....	"	"
" 16.	"	5	262	" Green Gage Plums.....	"	"
" 16.	M.	25	263	Marmalade Jelly.....	"	"
" 16.	B.	1	264	Kent Co. collection of Apples.....	William Rowe.....	Walker, Kent Co.
" 16.	"	3	265	Kent Co. collection of Pears.....	"	"
" 16.	E.	3	266	Plate Red Astrachan.....	"	"
" 16.	"	4	267	" Duchess of Oldenburg.....	"	"
" 16.	"	7	268	" Large Yellow Bough.....	"	"
" 16.	"	9	269	" Sine Qua Non.....	"	"
" 16.	"	10	270	" Early Strawberry.....	"	"
" 16.	"	13	271	" Lowell.....	"	"
" 16.	"	15	272	" Keswick Codlin.....	"	"
" 16.	"	16	273	" Cayuga Red Streak.....	"	"
" 16.	"	17	274	" Chenango Strawberry.....	"	"
" 16.	"	18	275	" Hawley.....	"	"
" 16.	"	19	276	" Dyer.....	"	"
" 16.	"	25	277	" Garden Royal.....	"	"
" 16.	"	26	278	" Summer Pearmain.....	"	"
" 16.	"	29	279	" Peck's Pleasant.....	"	"
" 16.	"	30	280	" R. I. Greening.....	"	"
" 16.	"	31	281	" Baldwin.....	"	"
" 16.	"	32	282	" Red Canada.....	"	"
" 16.	"	33	283	" Golden Russet.....	"	"
" 16.	"	35	284	" Wagener.....	"	"
" 16.	"	36	285	" Northern Spy.....	"	"
" 16.	"	46	286	" Shadwassee Beauty.....	"	"
" 16.	"	49	287	" Esopus Spitzenberg.....	"	"
" 16.	"	51	288	" Rambo.....	"	"
" 16.	"	51	289	" Toole's Indian Rareriepe.....	"	"
" 16.	"	51	290	" St. Lawrence.....	"	"
" 16.	F.	10	291	" Bartlett.....	"	"
" 16.	"	13	292	" Seckel.....	"	"
" 16.	"	15	293	" White Doyenne.....	"	"
" 16.	"	28	294	" Duchess D'Angouleme.....	"	"
" 16.	"	28	295	" L. Bon de Jersey.....	"	"
" 16.	I.	-----	296	Collection Seedling Apples.....	"	"
" 18.	H.	3	297	Five bunches Martha.....	A. J. Gould.....	Jackson.

REGISTER OF ENTRIES—CONTINUED.

DATE OF ENTRY.	Div.	Class.	No.	ARTICLE.	BY WHOM ENTERED.	P. O. ADDRESS AND REMARKS.
Sept. 18.	II.	4	298	Five bunches Hartford Prolific	A. J. Gould	Jackson.
" 18.	"	5	299	" " Eumelan	"	"
" 18.	"	6	300	" " Delaware	"	"
" 18.	"	8	301	" " Concord	"	"
" 18.	"	9	302	" " Iona	"	"
" 18.	"	7	303	" " Israella	"	"
" 18.	"	12	304	" " Agawam	"	"
" 18.	"	14	305	" " Creveling	"	"
" 18.	"	17	306	" " Allen's Hybrid	"	"
" 18.	"	18	307	" " Salem	"	"
" 18.	"	21	308	" " Rogers No. 1.	"	"
" 18.	"	21	309	" " Rogers No. 19	"	"
" 18.	Q.	6	310	Colored Foliage Plants	Mrs. Dr. W. W. Andrews	"
" 18.	"	10	311	Fuchsias	"	"
" 18.	"	31	312	Cyprus Altiumifolius	"	"
" 18.	"	13	313	Specimen Abutilon	"	"
" 18.	"	17	314	" " Calla	"	"
" 18.	"	29	315	" " Fern	"	"
" 18.	"	30	316	" " Lycopodium	"	"
" 18.	"	15	317	" " Begonia	"	"
" 18.	R.	22	318	Hanging Basket filled	"	"
" 18.	"	25	319	Climbing Plant trained to trellis	"	"
" 18.	T.	4	320	Small Floral design	"	"
" 18.	"	6	321	Pair Bouquets (natural)	"	"
" 18.	"	13	322	Basket of Cut Flowers	"	"
" 18.	"	10	323	Flat Bouquet	"	"
" 18.	"	11	324	Round Bouquets	"	"
" 18.	Q.	31	325	Vincen	"	"
" 18.	"	31	326	Night Blooming Jasmine	"	"
" 18.	F.	28	327	Duchess d'Angouleme	C. E. Webb	"
" 18.	II.	4	328	Hartford Prolific	"	"
" 18.	"	8	329	Concord	"	"
" 18.	"	21	330	Agawam No. 15	{	"
" 18.	"	21	331	Salem No. 53		"
" 18.	"	21	332	Merrimac No. 19		"
" 18.	J.	17	333	Plum for name	Dr. W. I. Brunson	"
" 18.	L.	14	334	English Gooseberries	Mrs. J. O. Smith	Eaton Rapids.
" 18.	"	6	335	Yellow Egg Plum	"	"
" 18.	Spec	326	336	Canned Pine Apples	"	"
" 18.	E.	40	337	Westfield Seek-no-Further	Amos F. Wood	Mason.
" 18.	"	13	338	Plate Lowell	"	"
" 18.	"	14	339	" " Porter	"	"
" 18.	"	42	340	" " King of Tompkins Co.	"	"
" 18.	"	22	341	" " Fall Pippin	"	"
" 18.	"	30	342	" " R. I. Greening	"	"
" 18.	"	31	343	" " Baldwin	"	"
" 18.	"	49	344	" " Esopus Spitzenberg	"	"
" 18.	"	51	345	" " Flushing	"	"
" 18.	"	36	346	" " Northern Spy	"	"
" 18.	"	51	347	" " Colverts	"	"
" 18.	"	44	348	" " Talman Sweet	"	"
" 18.	"	38	349	" " Fameuse (Snow)	"	"
" 18.	"	29	350	" " Peck's Plesant	"	"
" 18.	"	28	351	" " Pears	"	"
" 18.	F.	8	352	Five Bunches Concord	"	"
" 18.	II.	1	353	Collection grown by exhibitor	L. G. Bragg & Co.	Kalamazoo.
" 18.	E.	5	354	Plate Maiden's Blush	"	"
" 18.	"	13	355	" " Lowell	"	"
" 18.	"	16	356	" " Twenty Ounce	"	"
" 18.	"	28	357	" " Jonathan	"	"
" 18.	"	31	358	" " Baldwin	"	"
" 18.	"	33	359	" " Golden Russet	"	"
" 18.	"	35	360	" " Wagener	"	"
" 18.	"	36	361	" " Northern Spy	"	"
" 18.	"	40	362	" " Westfield Seek no-further	"	"
" 18.	"	41	363	" " Hubbardston Nonsuch	"	"
" 18.	"	42	364	" " King of Tompkins Co.	"	"
" 18.	F.	1	365	Col. Pears grown by exhibitor	"	"
" 18.	"	10	366	Plate Bartlett	"	"
" 18.	"	12	367	" " Flemish Beauty	"	"
" 18.	"	14	368	" " Onondaga	"	"
" 18.	"	21	369	" " Beurre Bosc	"	"
" 18.	H.	1	370	Col. native Grapes grown by exhibitor	"	"
" 18.	"	6	371	Five bunches Delaware	"	"
" 18.	"	8	372	" " Concord	"	"
" 18.	"	11	373	" " Diana	"	"
" 18.	"	12	374	" " Agawam	"	"

STATE POMOLOGICAL SOCIETY.

REGISTER OF ENTRIES—CONTINUED.

DATE OF ENTRY.	Div.	Class.	No.	ARTICLE.	BY WHOM ENTERED.	P. O. ADDRESS AND REMARKS.
Sept. 18.	H.	20	375	Plate Kalamazoo.....	L. G. Bragg & Co.	Kalamazoo.
" 18.	"	21	376	" Wilder.....	" "	"
" 18.	"	21	377	" Salem.....	" "	"
" 18.	"	21	378	" Merrimac.....	" "	"
" 18.	M.	19	379	Currant Jelly.....	Mrs. A. McClary	Galesburg.
" 18.	"	20	380	Apple Jelly.....	" "	"
" 18.	"	22	381	Grape Jelly.....	" "	"
" 18.	"	24	382	Blackberry Jelly.....	" "	"
" 18.	"	25	383	Cranberry Jelly.....	" "	"
" 18.	"	25	384	Peach Jelly.....	" "	"
" 18.	"	28	385	Apple Butter.....	" "	"
" 18.	"	21	386	Siberian Crab Jelly.....	" "	"
" 18.	L.	9	387	Canned Strawberries.....	" "	"
" 18.	K.	4	388	Dried Apples.....	" "	"
" 18.	"	8	389	" Cherries.....	" "	"
" 18.	"	9	390	" Strawberries.....	" "	"
" 18.	"	11	391	" Blackberries.....	" "	"
" 18.	"	14	392	" Currants.....	" "	"
" 18.	"	12	393	" Whortleberries.....	" "	"
" 18.	"	18	394	" Pumpkins.....	" "	"
" 18.	"	23	395	" Tomatoes.....	" "	"
" 18.	"	24	396	" Citrons.....	" "	"
" 18.	"	27	397	" Squashes.....	" "	"
" 18.	O.	1	398	Ornamental Nursery Stock and sample of staple.....	H. F. Thomas	Jackson.
" 18.	E.	31	399	Plate Baldwin.....	James G. Carver	Liberty, Jack-son Co.
" 18.	"	30	400	" R. I. Greening.....	" "	"
" 18.	"	49	401	" Esopus Spitzenberg.....	" "	"
" 18.	"	34	402	" Roxbury Russet.....	" "	"
" 18.	"	51	403	" Bellflower.....	" "	"
" 18.	"	44	404	" Talman Sweet.....	" "	"
" 18.	"	51	405	" Gillflower.....	" "	"
" 18.	"	22	406	" Fall Pippin.....	" "	"
" 18.	"	51	407	" Mammoth Pippin.....	" "	"
" 18.	"	16	408	" Twenty Ounce.....	" "	"
" 18.	"	51	409	" Lady Blush.....	" "	"
" 18.	L.	5	410	Canned Peaches.....	A. G. True	Rives.
" 18.	"	10	411	" Raspberries.....	" "	"
" 18.	"	18	412	" Tomatoes.....	" "	"
" 18.	"	11	413	" Blackberries.....	" "	"
" 18.	"	12	414	" Whortleberries.....	" "	"
" 18.	"	Spec'l	415	" Mince Meat.....	" "	"
" 18.	"	7	416	" Cherries.....	" "	"
" 18.	"	15	417	" Currants.....	" "	"
" 18.	N.	13	418	Currant Wine.....	" "	"
" 18.	"	17	419	Boiled Cider.....	" "	"
" 18.	K.	4	420	Dried Apples.....	Mrs. Richard Elliot	Lansing.
" 18.	"	16	421	" Elderberries.....	" "	"
" 18.	F.	15	422	Plate White Doyenne.....	" "	"
" 18.	"	12	423	" Flemish Beauty.....	" "	"
" 18.	T	8	424	Bouquet Dried Grasses and Flowers.....	" "	"
" 18.	N.	18	425	Cider Vinegar.....	" "	"
" 18.	H.	21	426	Rogers' Salem.....	Henry Bowen	Jackson.
" 18.	F.	28	427	Duchess d' Angouleme.....	" "	"
" 18.	K.	20	428	Dried Corn.....	Mrs. Richard Elliot	Lansing.
" 18.	E.	22	429	Fall Pippin.....	E. Benn	Sandstone, Jack-son Co.
" 18.	"	20	430	Bailey Sweet.....	" "	"
" 18.	"	51	431	Lady Washington.....	" "	"
" 18.	"	43	432	Yellow Bellflower.....	" "	"
" 18.	"	42	433	King of Tompkins County.....	" "	"
" 18.	"	35	434	Northern Spy.....	" "	"
" 18.	"	30	435	R. I. Greening.....	" "	"
" 18.	"	51	436	Danvers Winter Sweet.....	" "	"
" 18.	"	32	437	Red Canada.....	" "	"
" 18.	"	33	438	Golden Russet.....	" "	"
" 18.	"	48	439	Swaar.....	" "	"
" 18.	"	49	440	Esopus Spitzenberg.....	" "	"
" 18.	"	49	441	Westfield Seek-no-further.....	" "	"
" 18.	"	44	442	Talman Sweet.....	" "	"
" 18.	"	35	443	Wagener.....	" "	"
" 18.	N.	18	444	Cider Vinegar.....	G. M. Hasty	Lansing.
" 18.	"	16	445	Strained Cider.....	" "	"
" 18.	B.	1	446	Co. Col. Apples (Wayne Co.).....	J. W. Humphrey	Plymouth, Wayne Co.
" 18.	C.	1	447	Tp. Col. Apples (Plymouth).....	" "	"

REGISTER OF ENTRIES—CONTINUED.

DATE OF ENTRY.	Div.	Class.	No.	ARTICLE.	BY WHOM ENTERED.	P. O. ADDRESS AND REMARKS.
Sept. 18.	E.	1	448	Collection of Apples grown by exhibitor	J. W. Humphrey	Plymouth, Wayne Co.
" 18.	"	11	449	Plate Early Joe	"	"
" 18.	"	13	450	" Lowell	"	"
" 18.	"	14	451	" Porter	"	"
" 18.	"	18	452	" Hawley	"	"
" 18.	"	19	453	" Dyer	"	"
" 18.	"	27	454	" Autumn Swaar	"	"
" 18.	"	28	455	" Jonathan	"	"
" 18.	"	30	456	" R. I. Greening	"	"
" 18.	"	32	457	" Red Canada	"	"
" 18.	"	34	458	" Roxbury Russet	"	"
" 18.	"	38	459	" Fameuse	"	"
" 18.	"	39	460	" Bailey Sweet	"	"
" 18.	"	50	461	" Melon	"	"
" 18.	D.	1	462	Col. of Fruit grown by exhibitor	W. A. Holcomb	Francisco, Jackson Co.
" 18.	E.	1	463	Collection of Apples grown by exhibitor	"	"
" 18.	"	10	464	Plate Early Strawberry	"	"
" 18.	"	35	465	" Wagener	"	"
" 18.	"	42	466	" King of Tompkins Co.	"	"
" 18.	"	51	467	For name	"	"
" 18.	"	32	468	Plate Canada Red	"	"
" 18.	F.	1	469	Col. of Pears grown by exhibitor	"	"
" 18.	"	28	470	Duchess d' Angouleme	"	"
" 18.	E.	31	471	Plate Baldwin	E. Benn	Sandstone.
" 18.	H.	18	472	Isabella Grapes	A. J. Gould	Jackson.
" 18.	E.	5	473	Plate Maiden's Blush	D. Woodman	Paw Paw.
" 18.	"	20	474	" Jersey Sweet	"	"
" 18.	"	21	475	" Blenheim Pippin	"	"
" 18.	"	22	476	" Fall Pippin	"	"
" 18.	"	23	477	" Ohio Nonpareil	"	"
" 18.	"	30	478	" R. I. Greening	"	"
" 18.	"	31	479	" Baldwin	"	"
" 18.	"	32	480	" Red Canada	"	"
" 18.	"	33	481	" Golden Russet	"	"
" 18.	"	36	482	" Northern Spy	"	"
" 18.	"	37	483	" Belmont	"	"
" 18.	"	42	484	" King of Tompkins Co.	"	"
" 18.	"	43	485	" Yellow Bellflower	"	"
" 18.	"	44	486	" Talman Sweet	"	"
" 18.	"	51	487	" Rubicon	"	"
" 18.	"	51	488	" Vandevere	"	"
" 18.	"	51	489	" Mammoth Pippin	"	"
" 18.	"	51	490	" Flower of Genesee	"	"
" 18.	"	48	491	" Swaar	"	"
" 18.	L.	5	492	Canned Peaches 7 years old	Mrs. E. W. Heaton	Jackson.
" 18.	"	4	493	" Pears 7 years old	"	"
" 18.	"	7	494	" Cherries 7 years old	"	"
" 18.	"	12	495	" Whortleberries	"	"
" 18.	"	10	496	" Raspberries	"	"
" 18.	E.	1	497	Col. Apples grown by exhibitor	H. J. Crego	Liberty.
" 18.	"	5	498	Plate Maiden's Blush	"	"
" 18.	"	7	499	" Large Yellow Bough	"	"
" 18.	"	16	500	" Twenty Ounce	"	"
" 18.	"	51	501	" Red Bellflower	"	"
" 18.	"	29	502	" Peck's Pleasant	"	"
" 18.	"	31	503	" Baldwin	"	"
" 18.	"	34	504	" Roxbury Russet	"	"
" 18.	"	36	505	" Northern Spy	"	"
" 18.	"	40	506	" Westfield Seek-no-further	"	"
" 18.	"	49	507	" Esopus Spitzenberg	"	"
" 18.	"	51	508	" American Beauty	"	"
" 18.	"	51	509	" Alforston Pippin	"	"
" 18.	E.	51	510	" Blue Pearmain	"	"
" 18.	K.	4	511	Dried Apples	Miss Elva Crego	"
" 18.	H.	18	512	California Charter Oak	Mrs. Fred. Myers	Jackson.
" 18.	C.	1	513	Township Col. Apples (Spring Arbor)	G. L. Gavett	Sandstone.
" 18.	H.	1	514	Collection Native Grapes	"	"
" 18.	G.	21	515	Seedling Peaches	"	"
" 18.	F.	10	516	Plate Bartlett	J. M. Blowers	Lawrence, Van Buren Co.
" 18.	L.	4	517	Canned Pears	"	"
" 18.	F.	28	518	Duchess d' Angouleme	"	"
" 18.	"	28	519	Louise Bon de Jersey	"	"
" 18.	"	13	520	Plate Seckel	"	"

REGISTER OF ENTRIES—CONTINUED.

DATE OF ENTRY.	Div.	Class.	No.	ARTICLE.	BY WHOM ENTERED.	P. O. ADDRESS AND REMARKS.
Sept. 18.	B.	1	521	Co. Col. Apples (Van Buren Co.)	J. M. Blowers.....	Lawrence, Van Buren Co.
" 18.	C.	1	522	Tp. Col. Apples (Lawrence).....	"	"
" 18.	D.	1	523	Col. Fruit grown by exhibitor.....	"	"
" 18.	E.	51	524	President.....	"	"
" 18.	"	42	525	Plate King of Tompkins Co.....	"	"
" 18.	"	20	526	" Jersey Sweet.....	"	"
" 18.	"	51	527	" Minister.....	"	"
" 18.	"	51	528	" Genesteen.....	"	"
" 18.	"	30	529	R. I. Greening.....	"	"
" 18.	"	50	530	Plate Norton's Melon.....	"	"
" 18.	"	22	531	" Newtown Pippin.....	"	"
" 18.	"	51	532	" Detroit Black.....	"	"
" 18.	"	51	533	" Flower of Genesee.....	"	"
" 18.	"	17	534	" Chenango Strawberry.....	"	"
" 18.	"	51	535	" Autumn Strawberry.....	"	"
" 18.	"	51	536	" White Gillflower.....	"	"
" 18.	"	37	537	" Belmont.....	"	"
" 18.	"	51	538	" Flushing Spitzenberg.....	"	"
" 18.	"	51	539	" Orleans Beauty.....	"	"
" 18.	"	51	540	" Jonathan Spitzenberg.....	"	"
" 18.	"	32	541	" Red Canada.....	"	"
" 18.	"	13	542	" Lowell.....	"	"
" 18.	"	35	543	" Golden Russet.....	"	"
" 18.	"	51	544	" Bunker Hill.....	"	"
" 18.	"	51	545	" Detroit Red.....	"	"
" 18.	"	51	546	" Fallawater.....	"	"
" 18.	"	51	547	" Hamilton.....	"	"
" 18.	"	5	548	" Maiden's Blush.....	"	"
" 18.	"	51	549	" Autumn Belle.....	"	"
" 18.	"	51	550	" Ladies' Favorite.....	"	"
" 18.	"	51	551	" Rubicon.....	"	"
" 18.	"	51	552	" English Redstreak.....	"	"
" 19.	"	51	553	" Sweet Bough.....	"	"
" 19.	"	51	554	" Black Detroit.....	H. W. Doney.....	Jackson.
" 19.	"	31	555	" Baldwin.....	"	"
" 19.	"	21	556	" Pippin.....	"	"
" 19.	"	51	557	" Striped Bellflower.....	C. P. Chidester.....	Bellevue.
" 19.	"	51	558	" Perry Russet.....	"	"
" 19.	F.	14	559	" Onondaga.....	"	"
" 19.	"	13	560	" Seckel.....	"	"
" 19.	I.	-----	561	" Seedling Apples.....	"	"
" 19.	J.	5	562	Canned Peaches.....	J. B. Sweetland.....	Pontiac.
" 19.	"	6	563	" Plums.....	"	"
" 19.	"	7	564	" Cherries.....	"	"
" 19.	"	8	565	" Siberian Apples.....	"	"
" 19.	"	12	566	" Whortleberries.....	"	"
" 19.	"	1	567	Collection Canned Fruit by one establishment.....	"	"
" 19.	"	17	568	Canned Grapes.....	"	"
" 19.	"	18	569	" Tomatoes.....	"	"
" 19.	"	19	570	" Corn.....	"	"
" 19.	"	14	571	" Gooseberries.....	G. C. Draper.....	Jackson.
" 19.	"	7	572	" Cherries.....	"	"
" 19.	"	8	573	" Siberian Apples.....	"	"
" 19.	B.	3	574	Monroe Co. Collection of Pears.....	I. E. Ilgenfritz.....	Monroe.
" 19.	C.	1	575	Monroe Township Col. Apples.....	"	"
" 19.	F.	10	576	Plate Bartlett.....	"	"
" 19.	"	11	577	" Buffon.....	"	"
" 19.	"	12	578	" Flemish Beauty.....	"	"
" 19.	"	13	579	" Seckel.....	"	"
" 19.	"	14	580	" Onondaga.....	"	"
" 19.	"	15	581	" White Doyenne.....	"	"
" 19.	"	16	582	" Buerre d' Anjou.....	"	"
" 19.	"	18	583	" Sheldon.....	"	"
" 19.	"	23	584	" Lawrence.....	"	"
" 19.	"	24	585	" Buerre Diel.....	"	"
" 19.	"	25	586	" Winter Nelis.....	"	"
" 19.	"	26	587	" Buerre Clargou.....	"	"
" 19.	"	5	588	" Maiden's Blush.....	"	"
" 19.	E.	10	589	" Early Strawberry.....	"	"
" 19.	"	14	590	" Porter.....	"	"
" 19.	"	15	591	" Keswick Codlin.....	"	"
" 19.	"	16	592	" Twenty Ounce.....	"	"
" 19.	"	22	593	" Fall Pippin.....	"	"
" 19.	"	23	594	" Ohio Nonpareil.....	"	"
" 19.	"	25	595	" Garden Royal.....	"	"
" 19.	"	27	596	" Autumn Sweet.....	"	"

REGISTER OF ENTRIES—CONTINUED.

DATE OF ENTRY.	Div.	Class.	No.	ARTICLE.	BY WHOM ENTERED.	P. O. ADDRESS AND REMARKS.
Sept. 19.	E.	28	597	Plate Jonathan.....	I. E. Ilgenfritz.....	Monroe.
" 19.	"	29	598	" Peek's Pleasant.....	"	"
" 19.	"	30	599	" R. I. Greening.....	"	"
" 19.	"	31	600	" Baldwin.....	"	"
" 19.	"	32	601	" Red Canada.....	"	"
" 19.	"	33	602	" Golden Russet.....	"	"
" 19.	"	34	603	" Roxbury Russet.....	"	"
" 19.	"	35	604	" Wagener.....	"	"
" 19.	"	36	605	" Northern Spy.....	"	"
" 19.	"	37	606	" Belmont.....	"	"
" 19.	"	38	607	" Fameuse.....	"	"
" 19.	"	42	608	" King of Tompkins Co.....	"	"
" 19.	"	43	609	" Yellow Bellflower.....	"	"
" 19.	"	44	610	" Talman Sweet.....	"	"
" 19.	"	47	611	" Grimes' Golden.....	"	"
" 19.	"	48	612	" Swaar.....	"	"
" 19.	"	49	613	" Esopus Spitzenberg.....	"	"
" 19.	S.	17	614	Collection of Zenias.....	Horace Tanner.....	Jackson.
" 19.	"	9	615	" Petunias.....	"	"
" 19.	"	10	616	" Asters.....	"	"
" 19.	O.	3	617	Nursery Apple stock.....	I. E. Ilgenfritz.....	Monroe.
" 19.	"	6	618	" Pear trees.....	"	"
" 19.	"	7	619	" Cherry trees.....	"	"
" 19.	M.	25	620	Cherry Jelly.....	Mrs. A. McClary.....	Galesburg.
" 19.	"	23	621	Raspberry Jelly.....	"	"
" 19.	L.	22	622	Pickled Apples.....	"	"
" 19.	Spec'l	623	"	Tomatoes.....	"	"
" 19.	M.	25	624	Cider Jelly (sweet).....	W. C. Weeks.....	Napoleon, Jackson Co.
" 19.	"	25	625	" (sour).....	"	"
" 19.	E.	30	626	Plate R. I. Greening.....	H. W. Doney.....	Jackson.
" 19.	P.	1	627	Col. Stove Plants by one person.....	E. Van Haften.....	Kalamazoo.
" 19.	"	2	628	Collection Caladiums.....	"	"
" 19.	"	4	629	" Begonias.....	"	"
" 19.	"	8	630	Specimen Foliage Begonia.....	"	"
" 19.	Q.	1	631	Col. & Dis. Greenhouse Plants.....	"	"
" 19.	"	6	632	" Colored Foliage Plants.....	"	"
" 19.	"	8	633	" Cacti.....	"	"
" 19.	"	17	634	Specimen Calla.....	"	"
" 19.	R.	1	635	Collection House Plants.....	"	"
" 19.	"	7	636	Spec. plant Aloe or Agava.....	"	"
" 19.	"	16	637	" Flowering Begonia.....	"	"
" 19.	S.	20	638	Col. and display of Coxcombs.....	"	"
" 19.	V.	1	639	Display of Plants, etc.....	"	"
" 19.	P.	1	640	Collection Stove Plants.....	William R. Hibbard.....	Jackson.
" 19.	"	2	641	" Caladiums.....	"	"
" 19.	"	4	642	" Foliage Begonias.....	"	"
" 19.	P.	4	643	" Flowering Begonia.....	"	"
" 19.	"	8	644	Spec. plant Foliage Begonia.....	"	"
" 19.	"	8	645	" Flowering Begonia.....	"	"
" 19.	"	9	646	Specimen Alocasia.....	"	"
" 19.	"	14	647	" Hoya.....	"	"
" 19.	"	16	648	" Sanchezia Nobilis.....	"	"
" 19.	"	17	649	" Arcunia.....	"	"
" 19.	"	17	650	" Aucuba Japonica.....	"	"
" 19.	"	17	651	" Var. Hydranquea.....	"	"
" 19.	"	17	652	" Canna.....	"	"
" 19.	"	17	653	" Smilax.....	"	"
" 19.	"	17	654	" Florida Banna.....	"	"
" 19.	"	17	655	" Australian Banna.....	"	"
" 19.	Q.	1	656	Col. & display Greenhouse plants.....	"	"
" 19.	"	2	657	Collection Fuchsias.....	"	"
" 19.	"	3	658	" Roses.....	"	"
" 19.	"	4	659	Collection Ornamental-leaved Geraniums.....	"	"
" 19.	"	5	660	Single and double flowering Geranium.....	"	"
" 19.	"	6	661	Col. Foliage Plants.....	"	"
" 19.	"	11	662	Spec. plant Myrtus.....	"	"
" 19.	"	12	663	" Agapanthus.....	"	"
" 19.	"	16	664	" Bouvardia.....	"	"
" 19.	"	17	665	" Calla.....	"	"
" 19.	"	20	666	" Jasminum.....	"	"
" 19.	"	21	667	" Nerium.....	"	"
" 19.	"	22	668	" Salvia.....	"	"
" 19.	"	23	669	" Stevia.....	"	"
" 19.	"	24	670	" Tuberose.....	"	"
" 19.	"	9	671	Col. Greenhouse plants.....	"	"

REGISTER OF ENTRIES—CONTINUED.

DATE OF ENTRY.	Div.	Class.	No.	ARTICLE.	BY WHOM ENTERED.	P. O. ADDRESS AND REMARKS.
Sept. 19.	Q.	30	672	Specimen Lycopodium	W. R. Hibbard	Jackson.
" 19.	"	30	673	Specimen Primrose	"	"
" 19.	"	30	674	Collection Passion Vines	"	"
" 19.	"	30	675	Specimen Plumbago	"	"
" 19.	"	30	676	Collection Carnation	"	"
" 19.	E.	51	677	Striped Bellflower	Mrs. J. D. Price	Spring Arbor.
" 19.	"	51	678	Perry Russet	"	"
" 19.	F.	14	679	Plate Onondaga	"	"
" 19.	"	13	680	" Seckel	"	"
" 19.	I.	-----	681	Seedling Apples	"	"
" 19.	L.	Spec'l	682	Pickled Cucumbers	"	"
" 19.	"	"	683	Canned Beans	"	"
" 19.	"	2	684	Col. Dom. canned & pickled fruit	"	"
" 19.	M.	8	682½	Preserved Raspberries	"	"
" 19.	"	9	683½	" Blackberries	"	"
" 19.	"	15	684½	" Crab Apples	"	"
" 19.	E.	1	685	Col. Apples grown by exhibitor	Ed. Driggs	Palmyra.
" 19.	R.	19	732	Campanula pyramidalis	Mrs. C. M. Culver	Jackson.
" 19.	L.	2	734	Col. Dom. canned & pickled fruit	Mrs. M. W. Clark	"
" 19.	II.	6	735	Five bunches Delaware	"	"
" 19.	"	8	736	" Concord	"	"
" 19.	"	21	737	" " Rogers' Hybrid	"	"
" 19.	E.	36	738	Plate Northern Spy	D. H. Ranney	"
" 19.	"	31	739	" Baldwin	"	"
" 19.	"	41	740	" Hubbardston Nonsuch	"	"
" 19.	"	51	741	" For name	"	"
" 19.	"	51	742	" For name	"	"
" 19.	"	44	743	" Talman Sweet	"	"
" 19.	"	39	744	" R. I. Greening	"	"
" 19.	"	5	745	" Maiden's Blush	"	"
" 19.	S.	10	746	Collection of Asters	Miss Nellie Jenkins	"
" 19.	E.	51	749	Apples, Smith's Cider	C. P. Chidester	Bellevue, M.
" 19.	II.	1	750	Best collection Native	Jas. Sterling & Son	Montroe.
" 19.	"	4	751	Hartford Prolific	"	"
" 19.	"	6	752	Delaware	"	"
" 19.	"	8	753	Concord	"	"
" 19.	"	10	754	Ives' Seedling	"	"
" 19.	B.	4	755	Best County col. Grapes	"	"
" 19.	C.	4	756	" Township col. Grapes	"	"
" 19.	E.	51	757	Plate any other worthy variety	C. P. Chidester	Bellevue.
" 19.	"	25	758	" Summer Pearmain	D. H. Ranney	Jackson.
" 19.	"	51	759	" For name	"	"
" 19.	"	43	760	" Bellflower	"	"
" 19.	"	17	761	" Strawberry	"	"
" 19.	"	38	762	" Fameuse	"	"
" 19.	"	13	763	" Lowell	"	"
" 19.	F.	14	765	" Onondago	"	"
" 19.	"	15	766	" White Doyenne	"	"
" 19.	II.	8	768	Concord Grapes	"	"
" 19.	K.	4	769	Dried Apples	"	"
" 19.	"	8	770	" Cherries	"	"
" 19.	"	12	771	" Whortleberries	"	"
" 19.	E.	51	772	" Rawles' Janet	C. P. Chidester	Bellevue.
" 19.	"	51	773	" Hereford Pearmain	"	"
" 19.	"	51	774	" Gravenstein	"	"
" 19.	"	51	775	" Smokehouse	E. Benn	Sandstone.
" 19.	"	38	776	" Fameuse	"	"
" 19.	K.	4	777	Dried Apples	N. A. Holcomb	Sylvan, Washtenaw Co.
" 19.	"	5	778	" Pears	"	"
" 19.	"	6	779	" Peaches	"	"
" 19.	"	8	780	" Cherries	"	"
" 19.	"	10	781	" Raspberries (red)	"	"
" 19.	"	10	782	" Raspberries (black)	"	"
" 19.	"	11	783	" Blackberries	"	"
" 19.	K.	12	784	" Whortleberries	"	"
" 19.	"	20	785	" Corn	"	"
" 19.	E.	43	786	Plate Yellow Bellflower	A. G. True	Rives.
" 19.	"	51	787	" Zappaholica	"	"
" 19.	"	51	788	" Winter Pippin	"	"
" 19.	"	36	789	" Northern Spy	"	"
" 19.	"	30	790	" R. I. Greening	"	"
" 19.	"	49	791	" Esopus Spitzenberg	"	"
" 19.	"	51	792	" Sweet and Sour Greening	"	"
" 19.	"	30	793	" R. I. Greening	"	"
" 19.	"	42	794	" King Tompkins Co.	"	"
" 19.	"	44	795	" Talman Sweet	"	"
" 19.	"	31	796	" Baldwins	"	"

REGISTER OF ENTRIES—CONTINUED.

DATE OF ENTRY.	Div.	Class.	No.	ARTICLE.	BY WHOM ENTERED.	P. O. ADDRESS AND REMARKS.
Sept. 19.	E.	35	797	Plate Wagener.....	A. G. Truc.....	Rives.
" 19.	"	51	798	" Rambo.....	"	"
" 19.	"	26	799	" Summer Pearmain.....	"	"
" 19.	"	34	800	" Roxbury Russet.....	"	"
" 19.	"	43	801	" White Bellflower.....	"	"
" 19.	"	48	802	" Swaar.....	"	"
" 19.	F.	28	803	Winter Pears.....	"	"
" 19.	E.	51	804	Fall Wine.....	H. J. Crego.....	Jackson.
" 19.	D.	2	805	Col. fruit by Lenawee Jun. Farmer Club.....	M. Davis.....	Palmyra, Lenawee Co.
" 19.	E.	51	806	Fallwater.....	"	Monroe.
" 19.	"	51	807	American Beauty.....	I. E. Ilgenfritz.....	"
" 19.	"	51	808	Newtown Pippin.....	"	"
" 19.	"	51	809	Cabasha.....	"	"
" 19.	F.	28	810	Duchess d'Angouleme.....	"	"
" 19.	E.	45	811	Ladies' Sweet.....	"	"
" 19.	H.	2	812	Col. foreign Grapes grown under glass.....	A. Sigler.....	Adrian.
" 19.	B.	4	813	Co. Col. Grapes (Lenawee Co.)..	"	"
" 19.	"	12	814	Flemish Beauty.....	"	"
" 19.	"	28	815	Howel Pear.....	"	"
" 19.	"	28	816	Duchess d'Angouleme.....	J. T. Weeks.....	Napoleon.
" 19.	E.	40	817	Plate Westfield Seek-no-further	William Coner.....	Jackson.
" 19.	"	36	818	" Northern Spy.....	"	"
" 19.	"	30	819	" R. I. Greening.....	"	"
" 19.	"	33	820	" Golden Russet.....	"	"
" 19.	"	49	821	" Esopus Spitzenberg.....	"	"
" 19.	"	43	822	" Bellflower.....	"	"
" 19.	"	31	823	" Baldwin.....	"	"
" 19.	"	42	824	" King of Tompkins Co.....	"	"
" 19.	"	51	825	" Holland Pippin.....	"	"
" 19.	"	16	826	" Twenty-ounce.....	"	"
" 19.	S.	Spec'l	827	Princess Feathers.....	D. H. Ranney.....	"
" 19.	"	1	828	Collection of Verbenas.....	Mrs. Wm. Rowe.....	Walker, Grand Rapids.
" 19.	"	3	829	" Gladiolus.....	"	"
" 19.	"	11	830	" Dianthus.....	"	"
" 19.	"	12	831	" Pansies.....	"	"
" 19.	"	15	832	" German Stock.....	"	"
" 19.	"	17	833	" Zenias.....	"	"
" 19.	"	18	834	" Everlasting flowers.....	"	"
" 19.	"	20	835	" Coxcombs.....	"	"
" 19.	"	22	836	" Antirrhinum.....	"	"
" 19.	"	23	837	" Ornamental grasses.....	"	"
" 19.	T.	3	838	Arrangem't of flowers for table	"	"
" 19.	"	8	839	Bouquet of dried grasses and flowers.....	"	"
" 19.	Vick's	Spec'l	840	Col. cut flowers.....	"	"
" 19.	Vick's	Spec'l	841	Floral design by a lady amateur	"	"
" 19.	Q.	31	842	Rose Geranium.....	E. Van Haften.....	Kalamazoo.
" 19.	P.	5	843	Col. Flowering Begonias.....	"	"
" 19.	R.	22	844	Hanging-basket, filled.....	"	"
" 19.	E.	51	845	Plate Colvert.....	T. H. Swift.....	Sandstone.
" 19.	"	51	846	" Fall Geneting.....	"	"
" 19.	"	51	847	" Flushing Spitzenberg.....	"	"
" 19.	"	51	848	" Orchard Queen.....	"	"
" 19.	"	51	849	" Scalloped Gillflower.....	"	"
" 19.	"	5	850	" Maiden's Blush.....	"	"
" 19.	"	14	851	" Porter.....	"	"
" 19.	"	22	852	" Fall Pippin.....	"	"
" 19.	"	30	853	" R. I. Greening.....	"	"
" 19.	"	31	854	" Baldwin.....	"	"
" 19.	"	34	855	" Roxbury Russet.....	"	"
" 19.	"	36	856	" Northern Spy.....	"	"
" 19.	"	44	857	" Talman Sweet.....	"	"
" 19.	F.	15	858	" White Doyenne.....	"	"
" 19.	E.	42	858	" King Tompkins Co.....	Peter Collar.....	Adrian.
" 19.	"	48	860	" Swaar.....	D. H. Ranney.....	Jackson.
" 19.	"	51	861	" Winter Pearmain.....	"	"
" 19.	"	16	862	" Cayuga Red Streak.....	T. H. Swift.....	Sandstone.
" 19.	"	33	863	" Golden Russet.....	Peter Collar.....	Adrian.
" 19.	"	34	864	" Roxbury Russet.....	"	"
" 19.	"	51	865	" Dutch Mignonna.....	"	"
" 19.	"	28	866	" Jonathan.....	"	"
" 19.	F.	18	867	" Sheldon.....	"	"
" 19.	H.	5	868	" Emelan Grapes.....	A. Sigler.....	"
" 19.	"	9	869	" Iona.....	"	"

STATE POMOLOGICAL SOCIETY.

REGISTER OF ENTRIES—CONTINUED.

DATE OF ENTRY.	DIV.	Class.	No.	ARTICLE.	BY WHOM ENTERED.	P. O. ADDRESS AND REMARKS.
Sept. 19.	II.	17	870	Plate Allen's Hybrid	A. Sigler	Adrian.
" 19.	E.	31	871	" Baldwin	Peter Collar	"
" 19.	II.	8	872	Five bunches Concord	J. M. Peck	Henrietta, Jackson Co.
" 19.	"	9	873	" " Iona	"	"
" 19.	"	3	874	" " Martha	"	"
" 19.	"	6	875	" " Delaware	"	"
" 19.	"	18	876	" " Clinton	"	"
" 19.	F.	28	877	Plate Louis Bon de Jersey	"	"
" 19.	E.	42	878	" King of Tompkins Co.	"	"
" 19.	"	36	879	" Northern Spy	"	Jackson.
" 19.	"	30	880	" R. I. Greening	"	"
" 19.	"	35	881	" Wagener	"	"
" 19.	"	31	882	" Baldwin	"	"
" 19.	"	29	883	" Peck's Pleasant	"	"
" 19.	"	33	884	" Golden Russet	"	"
" 19.	"	48	885	" Swaar	"	"
" 19.	J.	1	886	Collection of Plums.	E. J. Shirts	Shelby, Oceana County.
" 19.	"	2	887	Washington Plums	"	"
" 19.	"	4	888	Duane's Purple	"	"
" 19.	"	6	889	Coe's Golden Drop	"	"
" 19.	"	8	890	Canada Egg	"	"
" 19.	"	10	891	Princess Yellow Egg	"	"
" 19.	"	17	892	German Prune	"	"
" 19.	"	17	893	Beckman	"	"
" 19.	"	17	894	Dorr's Favorite	"	"
" 19.	"	17	895	American Prune	"	"
" 19.	"	17	896	Damson	"	"
" 19.	G.	7	897	Barnard's	"	"
" 19.	G.	6	898	Plate Early Crawford	"	"
" 19.	"	21	899	" Seedling	"	"
" 19.	"	17	900	" Early York	"	"
" 19.	E.	51	901	" Summer Swaar	"	"
" 19.	"	51	902	" Ben Davis	"	"
" 19.	"	44	903	" Talman Sweet	"	"
" 19.	"	33	904	" Golden Russet	"	"
" 19.	"	54	905	" Pound Sweet	"	"
" 19.	"	7	906	" Yellow Bough	"	"
" 19.	"	35	907	" Wagener	"	"
" 19.	"	51	908	" Alexander	"	"
" 19.	"	51	909	" St. Lawrence	"	"
" 19.	"	5	910	" Maiden's Blush	"	"
" 19.	"	36	911	" Northern Spy	"	"
" 19.	G.	6	912	" Early Crawford	Father Buysse	Jackson.
" 19.	J.	17	913	" Purple Egg	E. J. Shirts	Shelby.
" 19.	F.	12	914	" Flemish Beauty	Blowers & Olds	Hamilton.
" 19.	"	27	915	" Doyenne de Boussock	"	"
" 19.	E.	41	916	" Hubbardston Nonsuch	"	"
" 19.	"	51	917	" Hubel	"	"
" 19.	"	51	918	" Rome Beauty	"	"
" 19.	"	51	919	" Wine Apple	"	"
" 19.	"	51	920	" Stark	"	"
" 19.	"	57	921	" Hyslop	"	"
" 19.	"	54	922	" Transcendent Crab	"	"
" 19.	"	51	923	" Plate Canada Rennet	"	"
" 19.	"	36	924	" Northern Spy	"	"
" 19.	"	51	925	" Pentwater	"	"
" 19.	"	16	926	" Twenty-ounce	"	"
" 19.	"	33	927	" Golden Russet	"	"
" 19.	G.	10	928	" Crawford's Late	"	"
" 19.	J.	18	929	" Quinces	"	"
" 19.	L.	5	930	" Canned Peaches	"	"
" 19.	E.	51	931	" Byer's Beauty Crab	"	"
" 19.	"	51	932	" William Twig	C. P. Chidester	Bellevue.
" 19.	"	51	933	" Alexander	"	"
" 19.	F.	12	934	" Flemish Beauty	D. H. Ranney	Jackson.
" 19.	"	11	935	" Onondaga	"	"
" 19.	S.	1	936	" Col. and display of Verbenas	Wm. R. Hibbard	"
" 19.	"	3	937	" " Gladiolus	"	"
" 19.	"	4	938	" " Geraniums	"	"
" 19.	E.	51	939	" Plate Late Strawberry	C. P. Chidester	Bellevue.
" 19.	S.	7	940	" Col. & display Chrysanthemums	Wm. R. Hibbard	Jackson.
" 19.	"	9	941	" " Petunias	"	"
" 19.	"	12	942	" " Pansies	"	"
" 19.	Q.	31	943	" Spec. plant Veronica	"	"
" 19.	"	31	944	" " Vinca	"	"
" 19.	"	31	945	" " Puntuto	"	"

REGISTER OF ENTRIES—CONTINUED.

DATE OF ENTRY.	Div.	Class.	No.	ARTICLE.	BY WHOM ENTERED.	P. O. ADDRESS AND REMARKS.
Sept. 19.	Q.	10	946	Specimen Bridal Rose.....	Wm. R. Hibbard.....	Jackson.
" 19.	"	10	947	" Habranthus.....	"	"
" 19.	"	31	948	" Eupatorium.....	"	"
" 19.	"	31	949	" Orange Tree.....	"	"
" 19.	"	31	950	" Fig Tree.....	"	"
" 19.	T.	5	951	Pair of Bouquets in formal method.....	"	"
" 19.	"	6	952	" " natural method.....	"	"
" 19.	"	7	953	Basket Flowers for table.....	"	"
" 19.	"	10	954	Flat Bouquet.....	"	"
" 19.	"	11	955	Pair Round Bouquets.....	"	"
" 19.	"	13	956	Dish of Cut Flowers.....	"	"
" 19.	"	4	957	Small floral design.....	"	"
" 19.	"	32	958	Vase of Cut Flowers.....	"	"
" 19.	V.	Swe'p.	959	Hot, Green and Bedding Plants.....	"	"
" 19.	R.	14	960	Specimen plant Salvia.....	"	"
" 19.	"	14	961	" " ".....	"	"
" 19.	"	14	962	" " ".....	"	"
" 19.	Q.	9	963	Collection Pepperomia.....	"	"
" 19.	"	9	964	" Tuberose.....	"	"
" 19.	"	31	965	Specimen Allermanthus.....	"	"
" 19.	"	31	966	" Achyranthus.....	"	"
" 19.	"	16	967	Collection Bouvardias.....	"	"
" 19.	"	31	968	Specimen Fabiana Imbricata.....	"	"
" 19.	"	26	969	Collection of Ferns.....	"	"
" 19.	"	31	970	Libonia Floribonda.....	"	"
" 19.	"	31	971	Poinsetta.....	"	"
" 19.	"	31	972	Tradescantia.....	"	"
" 19.	"	---	973	White Hardy Rose.....	"	"
" 19.	"	9	974	Lamastenia.....	"	"
" 19.	"	10	975	Agava.....	"	"
" 19.	"	10	976	Double Blue Lobelia.....	"	"
" 19.	"	10	977	Pilea.....	"	"
" 19.	"	10	978	Oxaylia.....	"	"
" 19.	P.	17	979	Peretorphi Augustifolia.....	"	"
" 19.	"	17	980	Cyprus.....	"	"
" 19.	"	17	981	Aloes.....	"	"
" 19.	"	17	982	Madeira.....	"	"
" 19.	Q.	9	983	Collection Salvias.....	"	"
" 19.	D.	2	984	Col. by Pomological Society.....	South Haven Pom. Society.	South Haven.
" 19.	G.	10	985	Plate Late Crawford.....	"	"
" 19.	"	11	986	Hill's Chili.....	"	"
" 19.	C.	2	987	Township collection Peaches.....	"	"
" 19.	"	Spec'l	988	Jar Pres'v'd Fruit, cold process.....	J. Taylor.....	Three Rivers.
" 19.	E.	16	989	Twenty-ounce.....	N. & C. Chilson.....	Battle Creek.
" 19.	"	22	990	Fall Pippin.....	"	"
" 19.	"	23	991	Ohio Nonpareil.....	"	"
" 19.	"	25	992	Garden Royal.....	"	"
" 19.	"	27	993	Plate Autumn Swaar.....	"	"
" 19.	"	28	994	" Jonathan.....	"	"
" 19.	"	29	995	" Peck's Pleasant.....	"	"
" 19.	"	30	996	" R. I. Greening.....	"	"
" 19.	"	31	997	" Baldwin.....	"	"
" 19.	"	32	998	" Red Canada.....	"	"
" 19.	"	33	999	" Golden Russet.....	"	"
" 19.	"	34	1000	" Roxbury Russet.....	"	"
" 19.	"	35	1001	" Wagener.....	"	"
" 19.	"	36	1002	" Northern Spy.....	"	"
" 19.	"	38	1002½	" Fameuse.....	"	"
" 19.	"	40	1003	" Westfield Seek-no-further.....	"	"
" 19.	"	41	1004	" Hubbardston Nonsuch.....	"	"
" 19.	"	42	1005	" King of Tompkins Co.....	"	"
" 19.	"	44	1007	" Talman Sweet.....	"	"
" 19.	"	45	1008	" Ladies' Sweet.....	"	"
" 19.	"	46	1009	" Shiawassee Beauty.....	"	"
" 19.	"	47	1010	" Grimes' Golden.....	"	"
" 19.	"	48	1011	" Swaar.....	"	"
" 19.	"	49	1012	" Esopus Spitzenberg.....	"	"
" 19.	"	51	1013	" Black Detroit.....	"	"
" 19.	"	51	1014	" Perry's Russet.....	"	"
" 19.	"	51	1015	" Colvert.....	"	"
" 19.	"	51	1016	" Winter Rambo.....	"	"
" 19.	"	51	1017	" Fallwater.....	"	"
" 19.	"	51	1018	" Gravenstein.....	"	"
" 19.	"	51	1019	" English Golden Russet.....	"	"
" 19.	"	51	1020	" Autumn Strawberry.....	"	"
" 19.	F.	28	1021	" Duchess d'Angouleme.....	S. E. Cooper.....	Francisco.
" 19.	"	18	1022	" Seckel.....	"	"
" 19.	G.	21	1023	" Seedling Peaches.....	"	"

STATE POMOLOGICAL SOCIETY.

REGISTER OF ENTRIES—CONTINUED.

DATE OF ENTRY.	Div.	Class.	No.	ARTICLE.	BY WHOM ENTERED.	P. O. ADDRESS AND REMARKS.
Sept. 19.	G.	21	1024	Plate Seedling Peaches	S. E. Cooper	Francisco.
" 19.	E.	35	1025	" Wagener	"	"
" 19.	"	30	1026	" R. I. Greening	"	"
" 19.	G.	10	1027	" Late Crawford	Dwight Merriman	Jackson.
" 19.	H.	1	1028	Col. Native Grapes	E. J. Sill	Three Rivers.
" 19.	B.	2	1029	Co. Col. Peaches (Allegan Co.) ..	Westen, Allegan Co. Pomological Society..	Saugatuck.
" 19.	H.	8	1030	Concord Grapes	D. V. Kern	Adrian.
" 19.	"	10	1031	Ives' Seedling	"	"
" 19.	"	6	1032	Delaware	"	"
" 19.	"	21	1033	Rogers' Hybrid	"	"
" 19.	E.	57	1034	Hyslop	E. J. Shirtz	Shelby.
" 19.	"	54	1035	Transcendent Crab	"	"
" 19.	F.	12	1036	Flemish Beauty	"	"
" 19.	"	28	1037	Vicar of Winkfield	"	"
" 19.	"	28	1038	Louise Bon de Jersey	"	"
" 19.	D.	1	1039	Col. fruit grown by exhibitor ..	G. L. Gavett	Sandstone.
" 19.	H.	18	1040	Valuable Var. Grapes	"	"
" 19.	Vick's	Spec'l	1041	Collection Cut Flowers	A. F. Clark	Saline, Washtenaw County.
" 19.	H.	12	1042	Agawam	A. O. Winchester	St. Joseph.
" 19.	"	21	1043	Rogers No. 4	"	"
" 19.	"	21	1044	Salem	Thos. Archer & Co.	"
" 19.	"	10	1045	Ives' Seedling	"	"
" 19.	"	8	1046	Concord	R. W. Van Bront	"
" 19.	"	10	1047	Ives' Seedling	"	"
" 19.	"	21	1048	Rogers No. 4	"	"
" 19.	H.	12	1049	Agawam	"	"
" 19.	E.	42	1050	Plant King of Tompkins Co.	John Whittlesey	"
" 19.	O.	5	1051	Col. Grape vines	Thos. Archer & Co.	"
" 19.	E.	22	1052	Fall Pippin	Blowers & Olds	Hamilton.
" 19.	"	31	1053	Baldwin	"	"
" 19.	"	38	1054	Snow or Fameuse	"	"
" 19.	"	51	1055	Ben Davis	"	"
" 19.	"	6	1056	Plate Primite	J. W. Humphrey	Plymouth.
" 19.	"	14	1057	" Porter	"	"
" 19.	"	5	1058	" Maiden's Blush	"	"
" 19.	"	51	1059	" Hubbel	D. Woodman	Paw Paw.
" 19.	"	51	1060	" Pennock	"	"
" 19.	"	51	1061	" Dutch Mignone	"	"
" 19.	S.	10	1062	Collection Asters	C. M. Hubbel	Ypsilanti.
" 19.	"	20	1063	" Coxcomb	"	"
" 19.	"	20	1064	" Coxcomb	Mrs. Alfred Russell	Jackson.
" 19.	Q.	9	1065	" Coleus	E. Van Haften	Kalamazoo.
" 19.	"	10	1066	Plant Coleus	"	"
" 19.	P.	16	1067	" Sanchezia Nobilis	"	"
" 19.	R.	13	1068	Single plant Oleander	"	"
" 19.	Spec'l	1087	1068	Five Fruit Baskets	C. L. Whitney	Muskegon.
" 19.	F.	28	1088	Vicar of Winkfield	L. G. Bragg & Co.	Kalamazoo
" 19.	"	28	1089	Louise Bon de Jersey	"	"
" 19.	H.	18	1090	Northern Muscadine	"	"
" 19.	O.	2	1091	Nursery stock of all kinds	"	"
" 16.	"	3	1091½	" Apple stock	"	"
" 19.	"	4	1092	Budded Peach Nursery stock ..	"	"
" 19.	"	5	1093	Nursery Grape vines	"	"
" 19.	"	6	1094	" Pear trees	"	"
" 19.	"	7	1095	" Cherry trees	"	"
" 19.	M.	25	1096	Dried Apple Jelly	A. F. Clark	Saline.
" 19.	"	25	1097	Green Grape Jelly	"	"
" 19.	"	25	1098	Pineapple Jelly	"	"
" 19.	"	25	1099	Strawberry Jelly	"	"
" 19.	"	25	1100	Red Cherry Jelly	"	"
" 19.	"	25	1101	Green Gage Jelly	"	"
" 19.	"	25	1102	Gooseberry Jelly	"	"
" 19.	"	25	1103	Elderberry Jelly	"	"
" 19.	"	25	1104	Pieplant Jelly	"	"
" 19.	"	25	1105	Lemon Jelly	"	"
" 19.	"	25	1106	White Cherry Jelly	"	"
" 19.	"	25	1107	Black Cherry Jelly	"	"
" 19.	"	25	1108	Damson Plum Jelly	"	"
" 19.	"	25	1109	Pear Jelly	"	"
" 19.	"	25	1110	Cranberry Jelly	"	"
" 19.	"	25	1111	Huckleberry Jelly	"	"
" 19.	"	25	1112	Peach Jelly	"	"
" 19.	"	21	1113	Crab Apple Jelly	"	"
" 19.	"	22	1114	Green Grape Jelly	"	"
" 19.	"	22	1115	Delaware Grape Jelly	"	"
" 19.	"	22	1116	Wild Grape Jelly	"	"

REGISTER OF ENTRIES—CONTINUED.

DATE OF ENTRY.	Div.	Class.	No.	ARTICLE.	BY WHOM ENTERED.	P. O. ADDRESS AND REMARKS.
Sept. 19.	M.	24	1117	Blackberry Jelly.....	A. F. Clark.....	Saline.
" 19.	"	19	1118	Red Currant Jelly.....	".....	"
" 19.	"	22	1119	Concord Grape Jelly.....	".....	"
" 19.	"	25	1120	Apple with Vanilla.....	".....	"
" 19.	"	20	1121	Green Apple Jelly.....	".....	"
" 19.	"	26	1122	Quince Jelly.....	".....	"
" 19.	"	19	1123	Black Currant Jelly.....	".....	"
" 19.	"	23	1124	Black Raspberry Jelly.....	".....	"
" 19.	L.	2	1125	Col. Pickled Fruit.....	".....	"
" 19.	"	18	1126	Canned Tomatoes.....	".....	"
" 19.	F.	28	1127	Duchess d'Angouleme.....	Westen, Allegan County, Pom. Society.....	Saugatuck.
" 19.	E.	54	1128	Transcendent Crab.....	L. G. Bragg & Co.....	Kalamazoo.
" 19.	E.	4	1129	Duchess of Oldenburg.....	E. J. Shirtz.....	Shelby.
" 19.	H.	19	1130	Catawba Grapes.....	J. M. Sterling & Son.....	Monroe.
" 19.	E.	1	1131	Col. grown by exhibitor.....	N. & C. Chilson.....	Battle Creek.
" 19.	"	2	1132	Col. by Battle Creek Grange.....	Battle Creek Grange,—N. Chilson.....	"
" 19.	R.	12	1133	Specimen Calla Lily.....	E. Cooley.....	Jackson.
" 19.	E.	51	1134	Rubicon.....	N. & C. Chilson.....	Battle Creek.
" 19.	"	51	1135	Lady Apple.....	".....	"
" 19.	"	51	1136	Newtown Pippin.....	".....	"
" 19.	"	42	1137	King of Tompkins Co.....	".....	"
" 19.	"	43	1138	Yellow Bellflower.....	".....	"
" 19.	"	16	1139	Twenty-ounce.....	".....	"
" 19.	D.	2	1140	Collection of Fruit.....	Oceana Co. Hort'l Society.....	Hart.
" 19.	B.	5	1141	Oceana Co. Col. Plums.....	D. L. Garver.....	"
" 19.	E.	54	1142	Transcendent Crab.....	".....	"
" 19.	"	51	1143	Plate Montreal Beauty.....	".....	"
" 19.	"	57	1144	" Hyslop.....	".....	"
" 19.	"	10	1145	" Early Strawberry.....	".....	"
" 19.	"	51	1146	" Alexander.....	".....	"
" 19.	"	1	1147	Col. Apples grown by exhibitor.....	".....	"
" 19.	J.	5	1148	Plate Yellow Egg.....	".....	"
" 19.	"	17	1149	" Pond's Seedling.....	".....	"
" 19.	Q.	9	1150	Col. Abutilons.....	W. R. Hibbard.....	Jackson.
" 19.	I.	-----	1151	Seedling Apples.....	George Taylor.....	Kalamazoo.
" 19.	G.	8	1152	Plate Old Mixon Free.....	South Haven Pom'l Soc'y.....	South Haven.
" 19.	"	9	1153	" Jacques Rareripe.....	".....	"
" 19.	H.	8	1154	Five bunches Concord.....	".....	"
" 19.	"	6	1155	" Delaware.....	".....	"
" 19.	E.	37	1156	Plate Belmont.....	".....	"
" 19.	N.	13	1157	Currant Wine.....	Mrs. Richard Elliot.....	Lansing.
" 19.	M.	25	1158	Strawberry Jelly.....	Mrs. L. C. Lincoln.....	Greenville.
" 19.	"	25	1159	Gooseberry Jelly.....	".....	"
" 19.	K.	5	1160	Dried Pears.....	Mrs. R. M. Cook.....	Charlotte.
" 19.	"	6	1161	" Peaches.....	".....	"
" 19.	"	7	1162	" Plums.....	".....	"
" 19.	"	8	1163	" Cherries.....	".....	"
" 19.	"	9	1164	" Strawberries.....	".....	"
" 19.	"	10	1165	" Raspberries, Red.....	".....	"
" 19.	"	11	1166	" Blackberries.....	".....	"
" 19.	"	12	1167	" Whortleberries.....	".....	"
" 19.	"	14	1168	" Currants.....	".....	"
" 19.	"	16	1169	" Elderberries.....	".....	"
" 19.	"	21	1170	" Grapes.....	".....	"
" 19.	"	22	1171	" Crab Apples.....	".....	"
" 19.	"	25	1172	" Pieplant.....	".....	"
" 19.	"	10	1173	" Raspberries, Black.....	".....	"
" 19.	E.	3	1174	Plate Red Astrachan.....	E. J. Shirtz.....	Shelby.
" 19.	"	51	1175	" Benoni.....	J. W. Humphrey.....	Plymouth.
" 19.	L.	Spec'l	1176	Canned Peas.....	J. B. Sweetland.....	Pontiac.
" 19.	E.	6	1177	Plate Primate.....	J. W. Humphrey.....	Plymouth.
" 19.	L.	Spec'l	1178	Canned Beans.....	J. B. Sweetland.....	Pontiac.

FRUITS AND FLOWERS AT THE STATE FAIR.

The State fair at Jackson for 1876 was great in all its departments, but excelled especially in floriculture, horticulture and pomology. The hall for this part of the exhibition was wholly unfit for its purpose. It was low, dark and gloomy, seriously wanting in light to enable spectators to properly view the articles on exhibition, and making it exceedingly tedious for viewing committees to properly perform their duties. It is certainly very desirable that a new and spacious hall should be erected for the accommodation of this class of articles.

The two distinctive features of this exhibition were the show of plants and the show of single varieties of fruits arranged under the supervision of Prof. Cook. No such exhibition of plants was ever before made in the State as was made by Mr. E. Cooley of Jackson. His plants were, many of them, rare and costly, of exceedingly good growth, rich in colors, showing much skill in propagation and cultivation. They were worthy of the Centennial. Mr. Cooley refused all second premiums, declaring that he only wanted the first or none at all.

The exhibition of Mr. Hibbard was very striking and beautiful. Many of his plants were in bloom, and hence attracted the attention of the people. This young florist is improving in his cultivation and is making rapid advance in his profession, for which he shows so much enthusiasm and devotion. The exhibition from Kalamazoo by the Messrs. Van Hatten contained a number of beautiful plants. Altogether this show of plants was a great feature of the occasion.

The collection of fruit arranged by Prof. Cook, who had Messrs. Garfield and Reynolds for assistants, was something new at our fairs. Each variety of apples, etc., was collected in groups, so that Baldwins appeared arranged together and so did each entry of each variety. The display was unique, original and instructive. Over each group was posted, in well printed placards, the name of the fruit. This afforded an opportunity to study and compare varieties which was duly appreciated by many observant people.

These two features of this department, the display of plants and of single varieties of fruit, were a great advance on any previous fair. Otherwise this department was after the usual and old way. Large collections, county and township, occupied much space. After a trial of many years we believe this class of collections should all be swept by the board. They contain much that is worthless, and much that is harmful. It is time to bring these exhibitions down to strictly meritorious and desirable varieties. It is no reason that a collection should obtain a premium because it contains 100 or 150 varieties. For this very reason such a collection should be viewed with suspicion. If this grade of collections should be continued they ought to be judged closely and by the strictly valuable sorts in each collection. The committees in this department were all efficient. We wish, especially, to notice the flower committee, Mrs. Dr. Tunnicliff, Mrs. T. Western, Mrs. Morrell, and Mr. S. O. Knapp. There never was a better or more faithful committee. They took charge of hot-house, green-house, and house plants, and after two days of hard labor, closed up their work most satisfactorily. It is just such committees, possessing knowledge, unprejudiced, firm and true, seeking only justice, that are wanted at our fairs. In the fruit department there were a number of experts for judges, among whom Mr. A. O. Winchester, of St. Joseph, and Mr. J. W. Humphrey,

of Plymouth, distinguished themselves. One such expert is worth a dozen green hands. The committee on domestic canned and dried fruits had a most trying job, but Mr. Stearns, chairman, says that he worked it through as well as he could, considering the poor light in the hall. There was hot competition in this class, and a very extensive display. This part of the hall very much needed the attention of some of the absent members of the Executive Committee. Should the next State fair be held at Jackson, we hope to greet a new hall, or a better lighted one, for our fruit and flower friends. They really deserve it, for a more devoted, enthusiastic and intelligent band of men and women do not exist in the State. We have heard no growling from them this year, for they knew the hard times, and were willing to put up with the old hall, but next year they ask for brighter and clearer quarters.

DETROIT, October 1, 1876.

LIST OF PREMIUMS AWARDED BY THE STATE POMOLOGICAL
SOCIETY AT THE STATE FAIR HELD AT JACKSON,
SEPTEMBER 18-22, 1876.

DIVISION B—COUNTY COLLECTIONS.

Class 1. County collection of Apples—First premium, J. M. Blowers, Van Buren county, \$25; second, William Rowe, Kent county, \$15; third, H. W. Doney, Jackson county, \$10; third, C. P. Chidester, Calhoun county, \$10. (The committee being unable to decide between the two latter, each was awarded a premium.)

Class 2. County collection of Peaches—First premium, Western Allegan County Pomological Society, Allegan county, \$15.

Class 3. County collection of Pears—First premium, I. E. Ilgenfritz, Monroe county, \$15; second, Wm. Rowe, Kent county, \$10.

Class 4. County collection of Grapes—First premium, A. Sigler, Lenawee county, \$12.

Class 5. County collection of Plums—First premium, D. L. Garver, Oceana county, \$10.

Special. County collection of Apples from best specimen orchard—First premium, J. W. Humphrey, Plymouth, \$15.

The committee recommend a premium of \$15 to Mr. Humphrey for his very fine collection of Apples, but they consider that it should appear as a collection from a specimen orchard. The number of varieties is very extensive, more than we should be willing to recommend for market or family purposes; but as a representative of a specimen orchard we consider it valuable.

The nomenclature was nearly perfect.

Committee—A. J. Cook, Lansing; N. Chilson, Battle Creek; — Hamilton.

DIVISION C—TOWNSHIP COLLECTIONS.

Class 1. Township collection of Apples—First premium, J. W. Humphrey, Plymouth, \$12; second, C. P. Chidester, Convis township, Bellevue P. O., \$10; third, J. M. Blowers, Lawrence, Van Buren county, \$5.

Class 2. Township collection of Peaches—First premium, South Haven Pomological Society, \$8.

Your committee on township collections of Apples would make the following report: We found on examination that J. W. Humphrey, of Plymouth, had a splendid collection of Apples of all the leading varieties, except one; Mr. Chidester second, and Mr. Blowers third in quality, taking the number of varieties into consideration for all purposes. But we found some very nice varieties in Mr. Ilgenfritz's collection.

Committee—H. W. Doney, Jackson; Edmond Potter; D. L. Garver.

DIVISION D—COLLECTIONS EXHIBITED BY INDIVIDUALS.

Class 1. Collection of Fruits grown by exhibitors—First premium, J. M. Blowers, Lawrence, \$20; second, G. L. Gavett, Sandstone, \$15.

Class 2. Collection of Fruit exhibited by Agricultural or Horticultural Society, Farmers' Club or Grange—First premium, South Haven Pomological Society, \$20; second, Oceana County Horticultural Society, \$15; third, Battle Creek Grange, \$10; third, Palmyra Farmers' Club, \$10.

NOTE.—The collection of the Palmyra Farmers' Club was a very superior collection of Apples; this division and class calls for a collection of Fruit, and as the other collections embrace many kinds of Fruit they were awarded first and second premiums, and this with the Battle Creek Grange a third premium.

Committee—A. O. Winchester, St. Joseph; J. W. Humphrey, Plymouth.

DIVISION E—APPLES.

Class 1. Collection of Apples grown by exhibitor—First premium, J. W. Humphrey, Plymouth, \$10; second, N. & C. Chilson, Battle Creek, \$5; third, Ed. Driggs, Palmyra, \$3.

Class 3. Plate Red Astrachan—First premium, E. J. Shirtz, Shelby, \$1; second, Wm. Rowe, Walker, 50c.

Class 4. Plate Duchess of Oldenburg—First premium, Wm. Rowe, Walker, \$1; second, E. J. Shirtz, Shelby, 50c.

Class 5. Plate Maiden's Blush—First premium, D. Woodman, Paw Paw, \$1; second, H. J. Crego, Liberty, 50c.

Class 6. Plate Primate—First premium, J. W. Humphrey, Plymouth, \$1.

Class 7. Plate Large Yellow Bough—First premium, W. Rowe, Walker, \$1; second, E. J. Shirtz, Shelby, 50c.

Class 9. Plate Sine Qua Non—First premium, Wm. Rowe, \$1.

Class 10. Plate Early Strawberry—First premium, D. L. Garver, \$1.

Class 11. Plate Early Joe—First premium, J. W. Humphrey, \$1.

Class 13. Plate Lowell—First premium, L. G. Bragg & Co., \$1; second, C. P. Chidester, 50c.

Class 14. Plate Porter—First premium, I. E. Ilgenfritz, \$1; J. W. Humphrey, 50c.

Class 15. Plate Keswick Codlin—First premium, Wm. Rowe, \$1; second, I. E. Ilgenfritz, 50c.

Class 16. Plate Twenty Ounce—First premium, Blowers & Olds, \$1; second, N. & C. Chilson, 50c.

Class 17. Plate Chenango Strawberry—First premium, J. M. Blowers, \$1; second, Wm. Rowe, 50c.

Class 18. Plate Hawley—First premium, J. W. Humphrey, \$1; second, C. P. Chidester, 50c.

Class 19. Plate Dyer—First premium, J. W. Humphrey, \$1.

Class 20. Plate Jersey Sweet—First premium, J. M. Blowers, \$1; second, D. Woodman, Paw Paw, 50c.

Class 21. Plate Blenheim Pippin—First premium, D. Woodman, \$1.

Class 22. Plate Fall Pippin—First premium, Blowers & Olds, \$1; second, N. & C. Chilson, 50c.

Class 23. Plate Ohio Nonpareil—First premium, N. & C. Chilson, \$1; second, I. E. Ilgenfritz, 50c.

Class 25. Plate Garden Royal—First premium, Wm. Rowe, \$1.

Class 27. Plate Autumn Swaar—First premium, N. & C. Chilson, \$1; second, J. W. Humphrey, 50c.

Class 28. Plate Jonathan—First premium, L. G. Bragg & Co., \$1; second, J. W. Humphrey, 50c.

Class 29. Plate Peck's Pleasant—First premium, C. P. Chidester, \$1; second, I. E. Ilgenfritz, 50c.

Class 30. Plate Rhode Island Greening—First premium, J. M. Blowers, \$1; second, D. Woodman, 50c.

Class 31. Plate Baldwin—First premium, D. Woodman, \$1; second, N. & C. Chilson, 50c.

Class 32. Plate Red Canada—First premium, J. W. Humphrey, \$1; second, J. M. Blowers, 50c.

Class 33. Plate Golden Russet—First premium, J. M. Blowers, \$1; second, L. G. Bragg & Co., 50c.

Class 34. Plate Roxbury Russet—H. C. Crego, Liberty, \$1; second, N. & C. Chilson, 50c.

Class 35. Plate Wagener—First premium, L. G. Bragg & Co., \$1; second, N. & C. Chilson, 50c.

Class 36. Plate Northern Spy—First premium, E. J. Shirtz, \$1; second, Blowers & Olds, 50c.

Class 37. Plate Belmont—First premium, South Haven Pomological Society, \$1; second, D. Woodman, 50c.

Class 38. Faneuse (known as Snow)—First premium, J. W. Humphrey, \$1; second, N. & C. Chilson, 50c.

Class 39. Plate Bailey Sweet—First premium, J. W. Humphrey, \$1; second, C. P. Chidester, 50c.

Class 40. Plate Westfield Seek-no-further—First premium, N. & C. Chilson, \$1; second, Wm. Coner, 50c.

Class 41. Plate Hubbardston Nonsuch—First premium, N. & C. Chilson, \$1; second, D. H. Ranney, 50c.

Class 42. Plate King of Tompkins County—First premium, John Whittlesey, St. Joseph, \$1; second, D. Woodman, Paw Paw, 50c.

Class 43. Plate Yellow Bellflower—First premium, Wm. Coner, \$1; second, I. E. Ilgenfritz, 50c.

Class 44. Plate Talman Sweet—First premium, N. & C. Chilson, \$1; second, I. E. Ilgenfritz, 50c.

Class 45. Plate Ladies' Sweet—First premium, I. E. Ilgenfritz, \$1.

Class 46. Plate Shiawassee Beauty—First premium, Wm. Rowe, \$1.

Class 47. Plate Grimes' Golden—First premium, N. & C. Chilson, \$1; second, I. E. Ilgenfritz, 50c.

Class 48. Plate Swaar—First premium, J. M. Peck, \$1; second, N. & C. Chilson, 50c.

Class 49. Plate Esopus Spitzenberg—First premium, N. & C. Chilson, \$1; second, Wm. Rowe, 50c.

Class 50. Plate Melon—First premium, J. M. Blowers, \$1; second, J. W. Humphrey, 50c.

Class 51. Plate any valuable variety—First premium, J. M. Blowers, Gravenstein; first, J. M. Blowers, (Flushing Spitzenberg); first, Blowers & Olds (Stark), \$1; first, Blowers & Olds (Byers' Beauty), \$1; first, N. & C. Chilson (Rubicon), \$1; first, J. W. Humphrey (Benoni), \$1.

Class 54. Plate Transcendent Crab—First premium, D. L. Garver, \$1; second, E. J. Shirts, 50c.

Class 57. Plate Hyslop—First premium, E. J. Shirts, \$1; D. L. Garver, 50c.

Committee—A. O. Winchester; A. G. Gulley; M. N. Hine.

DIVISION F—PEARS.

Class 1. Collection of Pears grown by exhibitor—First premium, L. G. Bragg & Co., Kalamazoo, \$10.

Class 10. Plate Bartlett—First premium, L. G. Bragg & Co., \$1; second, William Rowe, 50c.

Class 11. Plate Buffum—First premium, I. E. Ilgenfritz, \$1.

Class 12. Plate Flemish Beauty—First premium, E. J. Shirtz, \$1; second, Blowers & Olds, 50c.

Class 13. Plate Seekel—First premium, H. W. Doney, \$1; second, I. E. Ilgenfritz, 50c.

Class 14. Plate Onondaga—First premium, C. P. Chidester, \$1; second, I. E. Ilgenfritz, 50c.

Class 15. Plate White Doyenne—First premium, Wm. Rowe, \$1; second, I. E. Ilgenfritz, 50c.

Class 16. Plate Beurre d'Anjou—First premium, I. E. Ilgenfritz, \$1.

Class 18. Plate Sheldon—First premium, Peter Collar, Adrian, \$1; second, S. C. Cooper, Francisco, 50c.

Class 21. Plate Beurre Bosc—First premium, L. G. Bragg & Co., \$1.

Class 23. Plate Lawrence—First premium, I. E. Ilgenfritz, \$1.

Class 24. Plate Beurre Diel—First premium, I. E. Ilgenfritz, \$1.

Class 25. Plate Winter Nelis—First premium, I. E. Ilgenfritz, \$1.

Class 26. Plate Beurre Clairgeau—First premium, I. E. Ilgenfritz, \$1.

Class 27. Plate Doyenne Boussock—First premium, Blowers & Olds, \$1.

Class 28. Best plate any valuable and worthy variety—First premium, E. J. Shirtz, Vear of Winkfield, \$1; first, Western Allegan Pomological Society (Duchesse d'Angouleme), \$1.

Committee—N. Chilson; A. O. Winchester; W. J. Beal.

DIVISION G—PEACHES.

Class 6. Early Crawford—First premium, Father Buysse, Jackson, \$1; second, E. J. Shirtz, Shelby, 50c.

Class 7. Plate Barnard—First premium, E. J. Shirtz, Shelby, \$1.

Class 8. Plate Old Mixon Free—First premium, South Haven Pomological Society, South Haven, \$1.

Class 9. Plate Jacques Rareripe—First premium, South Haven Pomological Society, South Haven, \$1.

Class 10. Plate Late Crawford—First premium, Dwight Merriman, Jackson, \$1; second, Blowers & Olds, Hamilton, 50c; third, South Haven Pomological Society, 25c.

Class 11. Plate Hill's Chili—First premium, South Haven Pomological Society, \$1.

Class 21. Plate any valuable variety—First premium, C. P. Chidester, Bellevue, \$1; second, S. E. Cooper, Erancisco, 50c.

Your committee would report that they find the seedling peach entered by C. P. Chidester, of fine quality, beautiful color, free-stone, and worthy of being named and disseminated.

Committee—A. O. Winchester, St. Joseph; J. W. Humphrey, Plymouth.

DIVISION H—GRAPES.

Class 1. Collection of Native Grapes grown by exhibitor—First premium, L. G. Bragg & Co., \$10.

Class 2. Collection Foreign Grapes—First premium, A. Sigler, Adrian, \$15.

Class 3. Five bunches of Martha—First premium, J. M. Peck, \$1; second, A. J. Gould, 50c.

Class 4. Five bunches Hartford Prolific—First premium, J. M. Sterling & Son, Monroe, \$1; second, C. E. Webb, Jackson, \$50.

Class 5. Eumelan—First premium, A. Sigler, Adrian, \$1; second, A. J. Gould, Jackson, 50c.

Class 6. Delaware—First premium, L. G. Bragg & Co., \$1; second, J. M. Sterling & Son, 50c.

Class 9. Iona—Second premium, J. M. Peck, Jackson, 50c.

Class 10. Ives' Seedling—First premium, D. V. Kern, Adrian, \$1; second, Thomas Archer & Co., St. Joseph, 50c.

Class 12. Agawam—First premium, A. O. Winchester, St. Joseph, \$1; second, A. J. Gould, Jackson, 50c.

Class 19. Plate of Catawba—First premium, J. M. Sterling & Son, \$1.

Class 20. Plate of Kalamazoo—First premium, L. G. Bragg & Co., Kalamazoo, \$1.

Class 21. Any other valuable variety—First premium, A. J. Gould (Rogers' No. 1), \$1; first premium, D. V. Kern, Adrian (Rogers' Hybrid), \$1; first premium, Thomas Archer & Co., (Salem), \$1; second premium, L. G. Bragg & Co., (Wilder), 50c; second premium, A. O. Winchester (Rogers' No. 4), 50c; second premium, R. W. Van Brunt, (Rogers' No. 4), 50c; first premium, L. G. Bragg & Co. (Diana), \$1.

Your committee respectfully submit that, while we find many fine specimens of native grapes, we think the general exhibition of this class of fruit, is for some cause, below an average, and many of the varieties are wrongly named. We would suggest to the Executive Board a revision of the premium list in this class; some of the varieties we think should be dropped and new ones substituted. The foreign grapes of Mr. Sigler are equal to former years.

Committee—E. Bradfield, Ada; William Rowe, Walker; J. W. Humphrey, Plymouth.

DIVISION J—PLUMS, APRICOTS, NECTARINES, QUINCES, CRANBERRIES, AND NATIVE NUTS.

Class 1. Collection of Plums, not less than six varieties—First premium, E. J. Shirtz, \$10.

Class 2. Plate Washington—First Premium, E. J. Shirtz, \$1.

Class 4. Plate Duane's Purple—First premium, E. J. Shirtz, \$1.

Class 5. Plate Yellow Egg—First premium, D. L. Garver, Hart, \$1.

Class 6. Plate Coc's Golden Drop—First premium, E. J. Shirtz, \$1.

Class 8. Plate Canada Egg—First premium, E. J. Shirtz, \$1.

Class 10. Plate Prince's Yellow Egg—First premium, E. J. Shirtz, \$1.

Class 17. Any valuable variety not enumerated in the above—First premium, Dr. W. I. Bronson, Jackson, \$1; first premium, D. L. Garver, Hart (Pond's Seedling), \$1; second premium, E. J. Shirtz (Geneva Plum), 50c; second premium, E. J. Shirtz (Beckman), 50c; first premium, E. J. Shirtz (Davis' Favorite), \$10; first premium, E.

J. Shirtz (American Prune), 50c; second premium, E. J. Shirtz (Damson), 50c; second premium, E. J. Shirtz (Purple Egg), 50c.

Class 18. Plate Quinces—First premium, Blowers & Olds, \$1.

DIVISION K—DRIED FRUITS AND VEGETABLES.

Class 3. Collection domestic dried fruits—First premium, Mrs. L. C. Lincoln, Greenville, \$2.50.

Class 4. Dried Apples—First premium, Miss Elva Crego, Liberty, \$1.

Class 5. Dried Pears—First premium, Mrs. R. M. Cook, Charlotte, \$1.

Class 6. Dried Peaches—First premium, Mrs. L. C. Lincoln, Greenville, \$1.

Class 7. Dried Plums—Second premium, Mrs. R. M. Cook, Charlotte, 50c.

Class 8. Dried Cherries—First premium, Mrs. L. C. Lincoln, Greenville, \$1.

Class 9. Strawberries—First premium, Mrs. L. C. Lincoln, Greenville, \$1.

Class 10. Raspberries—First premium, Mrs. R. M. Cook, Charlotte, \$1.

Class 11. Blackberries—First premium, N. A. Holcomb, Sylvan, \$1.

Class 12. Whortleberries—First premium, N. A. Holcomb, Sylvan, \$1.

Class 14. Dried Currants—First premium, Mrs. A. McClary, Galesburg, \$1.

Class 15. Gooseberries—First premium, Mrs. L. C. Lincoln, Greenville, \$1.

Class 16. Dried Elderberries—First premium, Mrs. R. M. Cook, Charlotte, \$1; second premium, Mrs. Richard Elliot, Lansing, 50c.

Class 18. Pumpkins—First premium, Mrs. L. C. Lincoln, \$1; second premium, Mrs. A. McClary, 50c.

Class 20. Dried Corn—Second premium, Mrs. Richard Elliot, 50c.

Class 22. Crab Apples—First premium, Mrs. L. C. Lincoln, \$1.

Class 23. Tomatoes—First premium, Mrs. A. McClary, \$1.

Class 24. Citron—Second premium, Mrs. A. McClary, 50c.

Class 25. Pieplant—Second premium, Mrs. R. M. Cook, 50c.

Class 27. Dried Squashes—Second premium, Mrs. A. McClary, 50c.

Committee—E. J. Shirtz, Shelby; J. N. Stearns, Kalamazoo.

DIVISION L—CANNED AND PICKLED FRUITS.

Class 2. Collection of domestic Canned and Pickled Fruits—First premium, J. D. Price, Spring Arbor, \$1; second, M. W. Clark, Jackson, 50c.; third, Mrs. L. Eggleston, 25c.

Class 3. Canned Apples—First premium, Mrs. L. C. Lincoln, \$1.

Class 4. Canned Pears—First premium, Mrs. E. W. Heaton; second, J. M. Blowers, 50c.

Class 5. Canned Peaches—First premium, Blowers & Olds, \$1; second, Mrs. E. W. Heaton, 50c.

Class 6. Canned Plums—First premium, Mrs. J. O. Smith, \$1.

Class 7. Canned Cherries—First premium, Mrs. E. W. Heaton, \$1; second, Mrs. M. W. Clark, 50c.

Class 8. Canned and Siberian Apples—First premium, G. C. Draper, \$1; second, Mrs. L. C. Lincoln, 50c.

Class 9. Canned Strawberries—First premium, Mrs. A. McClary, Galesburg, \$1.

Class 10. Canned Raspberries—Second premium, Mrs. L. C. Lincoln, 50c.

Class 11. Blackberries—First premium, Mrs. Wm. Clark, \$1.

Class 12. Whortleberries—First premium, Mrs. E. W. Heaton, \$1.

Class 14. Gooseberries—First premium, G. C. Draper, \$1.

Class 15. Currants—First premium, Mrs. M. W. Clark, \$1.

Class 16. Pie-plant—Second premium, Mrs. L. C. Lincoln, 50c.

Class 17. Grapes—First premium, Mrs. M. W. Clark, \$1.

Class 18. Tomatoes—First premium, Mrs. L. C. Lincoln, \$1.

Class 19. Corn—First premium, Mrs. M. W. Clark, \$1.

Class 21. Pickled Peaches—First premium, Mrs. M. W. Clark, \$1.

Class 22. Pickled Apples—First premium, Mrs. A. McClary, \$1.

Class 23. Pickled Cherries—First premium, Mrs. L. C. Lincoln, \$1.

Class 24. Pickled Beans—First premium, Mrs. L. C. Lincoln, \$1.

DIVISION L—SPECIAL.

Canned Pumpkins—First premium, Mrs. M. W. Clark, \$1.

Canned Pickles—First premium, Mrs. M. W. Clark, \$1.

Canned Pine Apples—First premium, Mrs. J. O. Smith, \$1.

Pickled Cucumbers—First premium, Mrs. J. D. Price, \$1.

Your committee on dried, canned, preserved, and pickled Fruits find a complete collection of the same, and much so fine it would be too great a task to particularize. There seems to be much interest taken in this department by visitors and exhibitors—especially by exhibitors, as much of the Fruit was brought forty miles in wagons. Your committee labored hard to do justice to all, and, if they failed, it must be charged to the want of light. This hall would be one of the most attractive features of the fair if there was sufficient light: but as it is, it is gloomy, and visitors in passing along say they cannot tell a can of Peaches from a can of Blackberries. This should be remedied before another fair.

Committee—J. N. Stearns, Kalamazoo; E. J. Shirtz, Shelby.

DIVISION M—PRESERVED FRUITS AND JELLIES.

Class 1. Collection of Preserved Fruits and Jellies—First premium, Mrs. R. M. Cook, \$5; second, Mrs. L. C. Lincoln, \$3.

Class 2. Cider Apple-sauce—Second premium, Mrs. R. M. Cook, 50c.

Class 3. Preserved Pears—First premium, Mrs. L. C. Lincoln, \$1; second, M. W. Clark, 50c.

Class 4. Preserved Peaches—Second premium, Mrs. L. C. Lincoln, 50c.

Class 5. Preserved Plums—First premium, Mrs. M. W. Clark, \$1; second, Mrs. L. C. Lincoln, 50c.

Class 6. Preserved Cherries—First premium, Mrs. L. C. Lincoln, \$1.

Class 7. Preserved Strawberries—First premium, Mrs. L. C. Lincoln, \$1; second, Mrs. M. W. Clark, 50c.

Class 8. Preserved Raspberries—First premium, Mrs. M. W. Clark, \$1; second, Mrs. L. C. Lincoln, 50c.

Class 9. Preserved Blackberries—First premium, Mrs. L. C. Lincoln, \$1.

Class 10. Preserved Whortleberries—First premium, Mrs. L. C. Lincoln, \$1.

Class 11. Preserved Quinces—First premium, Mrs. L. Eggleston, \$1.

Class 12. Preserved Currants—First premium, Mrs. M. W. Clark, \$1.

Class 13. Preserved Gooseberries—First premium, Mrs. L. C. Lincoln, \$1.

Class 14. Preserved Grapes—First premium, Mrs. L. C. Lincoln, \$1.

Class 15. Preserved Crab Apples—First premium, Mrs. L. C. Lincoln, \$1.

Class 16. Preserved Tomatoes—First premium, Mrs. L. C. Lincoln, \$1.

Class 17. Preserved Citron—First premium, Mrs. L. Eggleston, \$1.

Class 18. Collection of Jellies—First premium, Mrs. L. C. Lincoln, \$1.

Class 19. Currant Jelly—First premium, Mrs. L. C. Lincoln, \$1.

Class 20. Apple Jelly—First premium, Mrs. L. C. Lincoln, \$1.

Class 21. Siberian Crab Jelly—A. F. Clark, Saline, \$1.

Class 22. Grape Jelly—First premium, A. F. Clark, \$1.

Class 23. Raspberry Jelly—First premium, Mrs. L. C. Lincoln, \$1.

Class 24. Blackberry Jelly—First premium, Mrs. L. C. Lincoln, \$1.

Class 25. Any other variety—First premium, Mrs. L. C. Lincoln (Pieplant Jelly), \$1; first premium, Mrs. M. W. Clark (Blue Plum Jelly), 1; second premium, Mrs. M. W. Clark (Pieplant Jelly), 50c; second premium, Mrs. M. W. Clark (Green Plum Jelly), 50c; first premium, A. F. Clark (Strawberry Jelly), \$1; first premium, A. F. Clark (Gooseberry Jelly), \$1; first premium, Mrs. L. C. Lincoln (Strawberry Jelly), \$1.

Class 26. Quince Jelly—First premium, A. F. Clark, Saline, \$1.

Class 28. Apple butter—Second premium, Mrs. A. McClary, 50c.

Committee—J. N. Stearns, Kalamazoo; E. J. Shirtz, Shelby.

DIVISION N—WINES, CIDER, VINEGAR, ETC.

Class 13. Currant Wine—First Premium, A. G. True, Rives, \$1; second, Mrs. Richard Elliot, Lansing, 50c.

Class 17. Boiled Cider—First premium, D. F. Vickery, Charlotte, \$1; second premium, A. G. True, Rives, 50c.

Class 18. Cider Vinegar—First premium, G. M. Hasty, Lansing, \$1; second, Mrs. Richard Elliot, Lansing, 50c.

Committee—E. F. Guild, East Saginaw; Mrs. Wm. Rowe, Grand Rapids.

DIVISION O—NURSERY STOCK.

Class 2. Collection of nursery stock of all kinds and descriptions, products of this State—First premium, L. G. Bragg & Co., Kalamazoo.

Class 3. Collection of nursery Apple stock of all kinds and ages, as well as the varieties recommended by the Society all labelled—first premium, I. E. Ilgenfritz, Monroe.

Class 5. Collection of nursery Grape vines, properly labelled—First premium, Thos. Archer & Co., St. Joseph.

Class 6. Collection of nursery Pear trees—First premium, I. E. Ilgenfritz, Monroe.

Class 7. Collection of nursery Cherry trees, both Duke, and Morello, and Heart, and Bigarreau—First premium, I. E. Ilgenfritz, Monroe.

Special. Best display of ornamental nursery stock—First premium, H. F. Thomas, Jackson.

The exhibition of both Messrs. Bragg & Co., and I. E. Ilgenfritz was very fine, and we think it is well worthy of being continued. The grape vines of Messrs. Archer & Co. are worthy of notice.

Committee—A. G. Gully, South Haven; A. A. Olds, Decatur; J. M. Blowers, Lawrence.

DIVISION P—HOT HOUSE OR STOVE PLANTS.

Class 1. Collection of Stove Plants exhibited by one person—First premium, E. Cooley, Jackson, \$10; second, W. R. Hibbard, Jackson, \$5; third, E. Van Haften, Kalamazoo, \$2.

Class 2. Collection of Caladiums—First premium, E. Cooley, \$2; second, W. R. Hibbard, \$1.

Class 3. Collection of Dracenas—First premium, E. Cooley, \$2.

Class 4. Collection of Foliage Begonias—First premium, E. Van Haften, \$2; second, W. R. Hibbard, \$1.

Class 5. Collection of any other family of hot-house plants—Second premium, E. Van Haften (Flowering Begonia), \$2.

Class 6. Specimen plant Caladium—First premium, E. Cooley, \$1.

Class 7. Specimen Dracenas—First premium, E. Cooley, \$1.

Class 8. Specimen Foliage Begonia—First premium, E. Van Haften, \$1; second, W. R. Hibbard, 50c.; first special, W. R. Hibbard, \$1.

Class 9. Specimen plant Alocasia—Second premium, W. R. Hibbard, 50c.

Class 10. Specimen plant Anthurium—First premium, E. Cooley, \$1.

Class 11. Specimen plant Cissus—First premium, E. Cooley, \$1.

Class 13. Specimen plant Croton—First premium, E. Cooley, \$1.

Class 14. Specimen plant Hoya—First premium, W. R. Hibbard, \$1.

Class 16. Specimen plant Sanchezia Nobilis—First premium, E. Cooley, \$1; second, E. Van Haften, 50c.; third, W. R. Hibbard, 25c.

Class 17. Specimen plant of any other species of stove plants not included in the first.—Acana, first premium, \$1; Variegated Cana, first premium, \$1; Smilax, first premium, \$1; Banana, first premium, \$1; Peristrophe, first premium, \$1; Cyprus, variegated, first premium, \$1; Aloes, first premium, \$1; Acuba Japonica, second, 50c.; Variegated Hydrangea, second, 50c.; Florida Banana, second, 50c.; Madeira, variegated, second, 50c.—all to W. R. Hibbard.

Committee—Mrs. C. E. Tunnicliff, S. O. Knapp, Mrs. Thos. Western, Mrs. M. J. Morrill.

DIVISION Q—GREENHOUSE PLANTS.

Class 1. Collection and display of greenhouse plants shown by one exhibitor—First premium, E. Cooley, \$10; second, E. Van Haften, \$5; third, W. R. Hibbard, \$3.

Class 2. Collection of Fuchsias—First premium, W. R. Hibbard, \$2.

Class 3. Collection of Roses—First premium, W. R. Hibbard, \$2.

Class 4. Collection Ornamental Leaved Geraniums—Third, W. R. Hibbard, 50c.

Class 5. Collection Single and Double Flowering Geraniums—First premium, W. R. Hibbard, \$2.

Class 6. Collection of Colored Foliage Plants—First premium, E. Cooley, \$2; second, W. R. Hibbard, \$1.

Class 8. Collection of Cacti—First premium, E. Van Haften, \$2.

Class 9. Collection of any other family of greenhouse plants not included in above list; collection of Coleus—First premium, E. Van Haften, \$2; collection of Abutilon, first premium, W. R. Hibbard, \$1; collection of Peperomia, second, W. R. Hibbard, \$1.

Class 10. Specimen plant Coleus Chameleon—Second premium, E. Van Haften, 50c.

Class 12. Specimen plant Agapanthus—First premium, W. R. Hibbard, \$1.

Class 13. Specimen plant Abutilon—Second premium, Mrs. Dr. W. W. Andrews, 50c.

Class 14. Specimen plant Aloysia Citriodora—First premium, E. Cooley, \$1.

Class 17. Specimen plant Calla—First premium, E. Cooley, \$1; second, W. R. Hibbard, 50c.

Class 20. Specimen plant Jasminum—Second premium, W. R. Hibbard, 50c.

Class 21. Specimen plant Nerium—First premium, W. R. Hibbard, \$1.

Class 22. Specimen plant Salvia—Second premium, W. R. Hibbard, 50c.

Class 26. Collection of Ferns—First premium, E. Cooley, \$1; second, W. R. Hibbard, 50c.

Class 27. Collection Lycopodiums—First premium, E. Cooley, \$1.

Class 29. Specimen Fern of any species—Second premium, Mrs. Dr. W. W. Andrews, 50c.

Class 30. Specimen plant Lycopodium—First premium, W. R. Hibbard, \$1; second, Mrs. Dr. W. W. Andrews, 50c.

Class 31. Specimen plant of any other species of greenhouse plants not included in the above list—Cacti, second premium, W. R. Hibbard, 50c; collection of Passion Vine, first premium, \$1; collection of Carnations, first premium, W. R. Hibbard, \$1; Rose Geranium, first premium, E. Van Hatten, \$1; Jasmine, second premium, 50c; Orange, second premium, W. R. Hibbard, 50c; Ailanthus, first premium, W. R. Hibbard, \$1; Acheyranthus, second premium, W. R. Hibbard, 50c; Yucca, first premium, \$1; Poinsettia, second premium, W. R. Hibbard, 50c.

Committee—Mrs. C. E. Tunnicliff, S. O. Knapp, Mrs. Thos. Western, Mrs. M. J. Morrill.

DIVISION R—HOUSE PLANTS.

Class 1. Collection of House Plants—First premium, E. Van Hatten, \$10.

Class 7. Specimen plant Aloe or Agave—first premium, E. Van Hatten, \$1.

Class 13. Specimen plant Nerium (Oleander)—First premium, E. Van Hatten, \$1.

Class 16. Specimen plant flowering Begonia—Second premium, E. Van Hatten, 50c.

Class 19. Specimen of any other species of house plant grown in the house, without the aid of glass, Campanula—First premium, Mrs. C. M. Culver, \$1.

Class 23. Hanging Basket filled—First premium, Mrs. Dr. W. W. Andrews, \$2; second, E. Van Hatten, \$1.

Class 25. Climbing plant trained to trellis, Lycopodium—First premium, Mrs. Dr. W. W. Andrews, \$2.

Committee—Mrs. C. E. Tunnicliff, S. O. Knapp, Mrs. Thomas Western, Mrs. M. J. Morrill.

DIVISION S—BEDDING PLANTS, HARDY PLANTS, HERBACEOUS PLANTS, SHRUBS, AND ANNUALS.

Class 1. Collection and display of Verbenas—First premium, W. R. Hibbard, Jackson, \$2; second, Mrs. Wm. Rowe, Grand Rapids, \$1.

Class 3. Collection and display of Gladiolus—First premium, Mrs. Wm. Rowe, \$2; second, W. R. Hibbard, \$1.

Class 4. Collection and display of Geraniums—First premium, W. R. Hibbard, \$2.

Class 6. Collection and display of Lantanas—First premium, Mrs. L. C. Lincoln, \$2.

Class 7. Collection and display of Chrysanthemums—First premium, W. R. Hibbard, \$2.

Class 9. Collection and display of Petunias—First premium, Mrs. R. M. Cook, \$2; second, Horace Tanner, Jackson, \$1.

Class 10. Collection and display of Asters—First premium, Nelly C. Jenkins, \$2; second, Horace Tanner, \$1.

Class 11. Collection and display of Dianthus—First premium, Mrs. Wm. Rowe, Grand Rapids, \$2.

Class 12. Collection and display of Pansies—First premium, W. R. Hibbard, \$2; Mrs. R. M. Cook, \$1.

Class 15. Collection and display of German Stocks—First premium, Mrs. Wm. Rowe, \$2.

Class 17. Collection and display of Zinnias—First premium, Horace Tanner, \$2; second, Mrs. Wm. Rowe, \$1; third, Nelly C. Jenkins, 50c.

Class 18. Collection and display of Everlastings—First premium, Mrs. L. C. Lincoln, \$2; second, Mrs. Wm. Rowe, \$1; third, Mrs. R. M. Cook, 50c.

Class 20. Collection and display of Coxcombs—First premium, Mrs. R. M. Cook, \$2; second, C. M. Hubbel, \$1; third, Mrs. Wm. Rowe, 50c.

Class 21. Collection and display Phlox Drummondii—First premium, Mrs. R. M. Cook, \$2; second, Mrs. L. C. Lincoln, \$1.

Class 22. Collection and display Antirrhinum—First premium, Mrs. L. C. Lincoln, \$2.

Class 23. Collection and display of ornamental grasses—First premium, Mrs. Wm. Rowe, \$2; second, Mrs. L. C. Lincoln, \$1.

Special—Princess Feather—First premium, D. H. Ranney, \$1.

Committee—Mrs. W. H. Withington, Jackson; Mrs. A. J. Gould, Jackson; Mrs. Austin Blair, Jackson.

DIVISION T—CUT FLOWERS.

Class 3. Arrangement and design of flowers for table—First premium, Mrs. Wm. Rowe, Grand Rapids, \$2.

Class 4. Small floral design of any kind—First premium, Mrs. Dr. W. W. Andrews, Jackson, \$2; second, W. R. Hibbard, Jackson, \$1; third, Nelly C. Jenkins, 50c.

Class 5. Pair bouquets arranged in formal method—First premium, W. R. Hibbard, Jackson, \$2.

Class 6. Pair bouquets arranged in natural and graceful style—First premium, Mrs. Dr. W. W. Andrews, \$2; second, W. R. Hibbard, \$1.

Class 7. Basket of flowers for table—First premium, W. R. Hibbard, \$2.

Class 8. Bouquet of dried grasses and flowers—First premium, Mrs. Wm. Rowe, \$2; second, R. M. Cook, \$1; third, L. C. Lincoln, 50c.

Class 10. Flat bouquet—First premium, Mrs. Dr. W. W. Andrews, \$2.

Class 11. Pair round bouquets—First premium, W. R. Hibbard, \$2; second, Nelly C. Jenkins, \$1.

Class 12. Vase cut flowers—First premium, W. R. Hibbard, \$2; second, Mrs. R. M. Cook, \$1.

Class 13. Dish or basket of cut flowers—First premium, Mrs. Dr. W. W. Andrews, \$2; second, W. R. Hibbard, \$1.

Your committee desire especially to call attention to the baskets and bouquets of flowers exhibited by Mr. E. Cooley, of Jackson. In beauty and perfection of the flowers, in artistic arrangement and designs, they are not equaled by any entered for premiums; and since Mr. Cooley has not made them the subject of competition, your committee can do no less than make report of them as they deserve.

Committee—Mrs. Dwight Merriman, Jackson; Mrs. H. H. Smith, Jackson; Wm. K. Gibson, Jackson.

DIVISION V—SWEEPSTAKES FOR FLOWERS.

Class 1. Largest and best display of plants of all descriptions, including hothouse plants, greenhouse plants, and bedding plants—First premium, E. Cooley, Jackson, \$25; second, W. R. Hibbard, Jackson, \$15; third, E. Van Haften, Kalamazoo, \$10.

Committee—Prof. A. J. Cook, Lansing; S. O. Knapp, Jackson; Mrs. D. H. Wolcott.

VICK'S FLORAL PREMIUMS.

Collection of cut flowers—First premium, Mrs. R. M. Cook, Charlotte, \$20; second, Mrs. Wm. Rowe, Grand Rapids, \$10; third, A. F. Clark, Saline, \$5; fourth, Mrs. L. C. Lincoln, Greenville, chromo.

Floral design, by a lady amateur—First premium, Nelly C. Jenkins, Jackson, \$5.

Committee—Wm. K. Gibson, Jackson; Mrs. Wm. K. Gibson; Mrs. C. W. Garfield, Lansing.

SPECIAL.

Fine display of vases, etc.—First premium, Mrs. R. A. Brundage, \$2.

Five fruit baskets—First premium, C. L. Whitney, Muskegon, Michigan Farmer one year.

The baskets exhibited are constructed upon a novel plan to prevent pilfering during transportation, also destroying fruit from pressure or bruising.

Committee—E. F. Guild, Chairman, East Saginaw.

EXOTIC PLANTS AT THE STATE FAIR.

To the President and Members of the State Pomological Society:

Your committee on flowers in division P, Q, and R, respectfully submit the following report:

We found upon entering the hall of fine arts a large collection of rare plants exhibited by Mr. E. Cooley, of Jackson, occupying a platform and nearly filling the center of the hall.

They were so artistically grouped and the colors so beautifully blended, we questioned if the *hand of woman* had not been there, but we found instead Mr. Cooley himself, ably assisted by his gardener E. B. Brockett, to whom we turned for information with regard to this rare and extensive exhibit.

As we gazed and wandered from plant to plant our admiration increased, and we knew not when or how to determine the superior merit of one over the other when deemed to demand so much credit, thus we feel compelled to give in this report a somewhat extensive list of this choice collection.

First of the palms were the *Areca lutescens*, a native of the Mascarene Islands, a graceful palm, considered to be one of the best in the State, and valued at \$100; *Areca verschoffeltii*, very choice and valued at \$75; *Cocus nucifera*, the Coconut of commerce, very choice and difficult to cultivate, supposed to be the only one in the State: this plant is worth \$60, from the Island of Ceylon. *Latania borbonica*, a native of the East Indies, a very fine specimen, one of the best, value \$160. *Cycas circinalis*, also a native of the East Indies, is an elegant palm, has probably no superior in this country, a collection seems incomplete without it, value \$175. *Cycas revoluta*, another fine palm, although not new yet scarce; this plant, worth \$50, is a native of China and Japan.

Besides these, Mr. Cooley exhibited a variety of smaller choice palms too numerous to mention, worth from \$12 to \$20, and it was with difficulty the committee could decide among so many valuable specimens.

We found also in this collection, a beautiful variety of the *Yucca aloifolia* variegata, from Mexico, worth \$100.

Among Ferns, the *Alsophila australis*, from Australia and New Zealand, a noble plant and valued at \$150. *Adiantum farleyense*, a choice variety and has few superiors; *Adiantum peruvianum*; *Adiantum colpodus*; *Adiantum cuneatum*; *Gleichenia dicarpa*, *Dicksonia antarctica*. All very choice.

Other plants the committee felt compelled to notice in this collection, among them the *Ficus Parceli*, *Ficus macrocarpa*, *Ficus macrophylla*, *Dracena indivisa*, *Dracena australis*, *Dracena canifolia*, *Dracena nigricans*, *Dracena guilfoylei*, *Maranta sanguinea*, *Maranta princeps*, *Maranta Vanden Heckeii*, *Maranta regalis*, *Maranta warsewiczii*, *Maranta zebrina*, *Cyanophyllum*, *magnificum*, *Anthurium magnificum*, *Anthurium regale*, *Anthurium Scherzerianum*, *Beaucarnea recurvata*, and *Beaucarnea glauca*, *Musa sapientum*, *Nepenthes sedenii* (East India pitcher plant), *Monstera deliciosa*, *Phormium tenax*, *Phormium tenax variegata*. This comprised the choicest of this collection.

Leaving the Cooley collection, we passed on to where we found the Van Hattan Brothers, of Kalamazoo, with their specimens brightening another portion of the hall, adding another attractive feature to the State Fair. In the area about the fountain these plants were clustered, and we found the bright *Coleus* there; the Ferns, with their feathery spray, the hardy looking *Aloe*, the *Begonias* in numberless variety, the *Ficus*, *Maranta*, *Dracena*, *Yucca*, *Cypress*, *Caladiums*, *Palms*, and others; healthy, well grown and beautiful plants. A collection of hothouse and stove plants, particularly fine, which did great credit to the exhibitors.

Had this collection not been placed in competition with others so superior, the committee would have felt compelled to have given a much greater share of first premiums.

These florists will be heard from again if we are not mistaken, and we hope a better opportunity and place will be provided for them, where they can display their collection more to their satisfaction and to better advantage.

Our next visit was to Mr. Wm. Hibbard, of Jackson, a young florist and gardener, who deserves a more extended notice at our hands for his industry, perseverance, patience in overcoming difficulties, and great interest in his work.

The immense collection he brought to the hall, and the arrangement of the display, was the admiration of all. The sweepstake pyramid, occupying the center and towering high above us, the long line of shelves filled with fine specimens of Carnations in full bloom, Ferns and Foliage plants, sweet scented Jessamines, skillfully trained vines, Roses, from the delicate tea to the deepest crimson, Verbenas, Pansies, Geraniums, Cinerarias, Lycopodium, with its wonderful green, other choice, well grown, healthy hothouse and stove plants in numberless variety, specimens of bedding-out plants, which Mr. Hibbard makes a specialty, and to which the committee gave particular attention. And here let us say we were glad to notice a marked improvement in the growth of specimens over the tall and naked plants usually exhibited from our crowded greenhouses.

Mrs. Dr. Andrews, another florist, of Jackson, was here also with a small, though choice collection from her greenhouse, showing what a woman can do with her heart in her work. The portion of the hall set apart for her display was beautifully and tastefully fitted up and filled with plants and hanging baskets. The tender and delicate Smilax was there, the Ivies, Wax plants, Jessamines, Abutilons, Lycopodiums, Geraniums, floral designs in cut flowers, bouquets skillfully arranged, and in perfection was a Tree Fuchsia, the finest and best grown specimen on exhibition. Mrs. Andrews shows remarkable skill in the arrangement of cut flowers, and a perfectness in the growth of her exhibits; no dead leaves, no scragginess, and no lack of pruning and directing into proper shape the growing plants. All looked neat, healthy, and were so exquisitely arranged that we lingered long at this spot, and would say just here that a visit to Mrs. Andrews' greenhouse will well repay one whenever they have an hour of leisure, and where they will find in this lady an agreeable and intelligent florist.

In closing this report the committee wish to tender thanks to these exhibitors for their efforts in making the floral department of our State fair of 1876 so great a success.

MRS. C. E. TUNNICLIFF,
MRS. THOS. WESTERN,
MRS. M. J. MORRILL,
S. O. KNAPP,

Committee.

REPORTS FROM LOCAL SOCIETIES.

GRAND RIVER VALLEY HORTICULTURAL SOCIETY.

OFFICERS.

President—C. N. Merriman.

Vice President—William Rowe.

Secretary—W. N. Cook.

Treasurer—S. L. Fuller.

This Society held monthly meetings during the entire year of 1876, which were well attended, and exhibited a commendable degree of interest and enthusiasm in the culture of fruits and flowers. The following comprises the most important discussions, and papers presented:

At the February meeting a discussion took place on the shipment of fruits long distances and the best methods of packing, and it was decided that apples would keep best by wrapping them in paper, in barrels, and filling the interstices with dry chaff or straw.

W. N. Cook feared that if apples were packed in chaff heat would be produced and the apples would decay.

Mr. Suttle.—Chaff and straw are non-conductors of heat.

Henry Holt.—Chaff heated the ice in my ice house and melted it down.

PEACHES.

The subject of packing peaches was then taken up, and Mr. Dickinson said the best method in his knowledge was to wrap each peach in paper separately, and to place them in sectional boxes, surrounding each peach with cotton or wool to prevent bruising.

Mr. Waters suggested that peaches would not keep two hours after arriving in Philadelphia if sent in a refrigerator car.

Mr. Dickinson's method was adopted.

STRAWBERRIES.

Mr. P. W. Johnson said the best method was to place strawberries in layers in boxes, with grass or leaves between each layer.

Mr. Holt suggested that grape leaves should be placed between the layers instead of leaves or grass.

By general consent this plan was adopted.

GRAPES.

The subject of packing grapes next engaged the attention of the Society.

President Bradfield declared that grapes should be placed in boxes, but they

are a very delicate fruit to ship long distances. If left in boxes when placed on exhibition, they look well, but often when taken out the clusters fall to pieces. It was desirable to cut off two or three inches of wood with each stem, which assists in keeping them fresh.

Mr. Cook said at the last meeting of the State Pomological Society at Jackson Mr. Sigler, a grape grower of Adrian, showed some fine specimens of grapes which hung on pieces of the vine, and placed in jars of water. He declared that it is important that some one should accompany the fruit sent from Michigan to Philadelphia, to see that it is handled carefully and properly placed on exhibition.

Mr. Suttle said his method was to place some grape leaves in the bottom of a box, and wrap the clusters in cotton batting. He would also place leaves at the top and sides of the box. He had packed flowers in this way, and shipped them long distances, when the thermometer was forty degrees below zero. Nothing kept grapes in such good order as cotton wool.

Mr. Dickinson recommended Mr. Suttle's plan, and President Bradfield declared he had used it successfully.

Mr. Merriman said he had packed grapes successfully by placing the clusters in paper bags, and suspending the bags from wires stretched across shallow boxes. Sufficient paper should be placed between the packages to prevent bruising.

At this meeting Mr. Dickinson gave an address on the codling moth, prefacing his remarks by reading from a pamphlet prepared by Prof. Cook, of the State Agricultural College, giving a description of various insects destructive to fruits and vegetables, and his methods of exterminating the same. He pronounced Prof. Cook's method of destroying the codling moth—*i. e.* by means of cloth bandages on the trees, and crushing the insects with the thumbs or a ringing machine—laborious, expensive, and but partially successful.

His method was first to build a fence around the orchard that would hold hogs; second, to mulch the trees thoroughly in the spring; third, to prune thoroughly and burn the brush as soon as possible; fourth, to scrape off the loose bark on the body and branches, so that the moths cannot secrete themselves upon the trees. When the scraping and pruning has been done, wash the trees thoroughly in a solution of weak lye and soap. The speaker had used this means successfully for fifteen years to protect his trees from the borer. The lye should be one-quarter the strength of that used for making soap, to which should be added sufficient soap to make suds. Wash the tree thoroughly with an old broom, using care not to touch the foliage. After mulching the trees scatter a few oats upon the mulch, then turn in the hogs. One sow and ten pigs will take care of an orchard containing one hundred trees. The hogs will root up the mulching for the oats, and either chew up or trample to death all the moths that secrete themselves under the trees. When the apples are half grown jar the trees thoroughly until the apples infested by the moth drop off. The best time to prune is when the trees are in full blossom and the sap is running, for the reason that the wound will heal quicker than at any other time.

Mr. Merriman objected to the adoption of the last recommendation by the Society.

This method was discussed at considerable length.

Mr. DeCou declared that where one sound apple is grown, twenty are partially destroyed by the codling moth.

Mr. Dickinson said that of every bushel of apples grown, one-third are fit

only for cider, one-third are partially merchantable, and the remainder are passably good. He expressed the belief that the consumer suffered more from the failure to produce sound apples than the grower, and declared it to be for the interests of the former to attend the meetings of this Society, and use their influence to suppress the apple pest.

At the April meeting Mr. DeCou read the following paper on

ORCHARD CULTIVATION:

MR. PRESIDENT—I find myself called upon to illuminate a subject without any oil. In bringing this subject before the Society, I did so for the reason that I knew nothing about it, and I wished to learn from the practical experience of others. How late in the season should ground be cultivated in an orchard, or around fruit of any kind? Now, it is the most easy thing in the world to stop cultivating; in fact, too easy. But while we have the subject of cultivation before us, would it not be well to take into consideration how early to commence? If stirring the ground in the spring will start trees to growing any earlier, should we not, to avoid late frosts, wait until the buds begin to open, and then hurry them through a period of a few days, when there is the most danger? When only growth is wanted, I would commence to cultivate as soon as the ground is fit to work. In raising a crop of corn we find the more thorough the cultivation, the sooner the crop matures, and no amount of cultivation will make it grow any longer: and so with fruit, cultivation will increase the size and hasten the time of ripening, but will it extend the time? Now, the question is: Will trees and vines stop growing at the proper time? If not, why not? I have noticed trees in a very hot, dry time in summer stop growing, but when fall rains came, they would start and grow until frost came and winter found them very tender. Can this be helped by proper cultivation? I think it can. I find by the record of the fall of 1869 that late cultivated trees were injured most by early frost. I cultivated a young orchard quite late that fall, and lost a good many trees, but laid it at the time to early freezing. In looking over the reports of the State Horticultural Society I find but little said on this subject. I think the subject important. If every member of this Society would investigate for himself I think before the next Centennial we should be able to say to our trees and vines, "So long shalt thou grow, and no longer."

Then followed a general discussion of the topic and kindred subjects suggested by Mr. De Cou's paper.

Mr. John Suttle.—Late cultivation of trees causes a late growth. I would not cultivate after August, as then the trees go into the winter too tender. Any woody plant can be started into growth by cultivation.

Mr. Harvey Smith, of Georgetown, Ottawa county.—I quite agree with Mr. Suttle. Late cultivation induces late growth. I am opposed to the practice.

Mr. Sala Smith of Grand Rapids town—All botanists and horticulturists know that there are two growths, annually, with woody plants. There is a growth in the fall whether trees are cultivated or not. Cultivation increases the growth, and hence trees are more liable to injury from the cold; when the growth of the trees and fruit is slow, and apples mature later, they will keep much better. I have plowed my orchards in the spring and in the fall and could not see any difference as to the trees enduring the winters. The Golden Russet will endure more extreme winters than oak grubs, as I have observed. I regard any cultivation or practice as beneficial that will retard the development of fruit. In cultivating my orchards I generally plow late in the fall.

In that way millions of noxious insects are exposed to the effects of frost and destroyed. Late plowing does not affect the late growth of the trees. Then in the spring I would plant corn or potatoes,—I prefer potatoes,—in the orchard. In that way the orchard is well cultivated. After an orchard is ten years old I would sow oats or buckwheat, and then when they are well up I would turn in the hogs and let them “go for” the codling moths.

Mr. Harvey Smith.—Peas are equally as good as buckwheat for the purpose Mr. Dickinson mentions, I would plow early, but not late.

Mr. W. K. Munson, the nurseryman, read the following paper, which is valuable at this time to all who intend planting orchards or other trees this spring, on the subject of

PLANTING AND CARE OF FRUIT TREES:

MR. PRESIDENT:—It is a well known fact that thousands of fine grown healthy trees are annually lost to the purchaser in their removal from the nursery, and through neglect and bad treatment afterward.

Although their loss may be sometimes properly charged to the nurseryman and dealer in trees, yet it is often the result of bad management in planting out and after-cultivation.

In setting an orchard the first things to consider are when and where to procure the trees. Both fall and spring planting have their advantages and strong advocates; if you plant in the fall you have more time to fit the soil, and set the trees properly; the wounded roots will callous, where they are injured, the ground will settle about the roots, and in the spring the tree will begin to grow as soon as it has a chance. The arguments in favor of spring planting are: if the winter is very severe the tree set in the fall is more likely to be injured than if it had remained in the nursery; still, if the tree has been properly handled from the beginning, there is very little risk in either season.

Get your trees from the nearest reliable nursery and set them out as soon as possible after they are lifted from the nursery row. Have your ground thoroughly prepared and holes dug before getting the trees. The holes should be dug two or three times as broad as the roots of the tree extend, and eighteen inches to two feet deep, and if necessary the ground enriched with well rotted manure, thoroughly mixed with the soil; fill the hole so that when the tree is set on a mound in the center of the hole it will stand the same depth in the ground that it did in the nursery. Before planting, all broken and bruised roots should be cut off with a sharp knife sloping from the under side. Set the tree on the mound, spread the roots in their natural shape, and sift fine dirt on them, so as to bring soil in contact with every fiber. When you have filled above the roots so there is no danger of bruising, tramp the ground solid, set your tree firm as a post, with loose soil on top, two or three inches above the level of the ground about, so that when the ground settles it will not leave a hole about the trees. In the fall raise a mound a foot high about the tree to keep the wind from swaying it, and to guard against mice; in the spring level this mound.

Every tree, whether planted in the fall or spring, should be mulched in the spring three or four inches deep, and two or three feet each way from the tree, with coarse manure.

Prune the trees in the spring; pick out the limb you wish for the leader, cut it back to the desired height, then trim off all the side limbs but three or four, leaving them in position to make a well balanced head, and cut them to from

three to five buds: do not be afraid to slash off a fine looking top. "Spare the knife and spoil the tree."

Grow some hoed crop among your trees, and hoe about them as well as you do your potatoes and then replace the mulch.

Do not plant too many varieties: some people seem to think the value of the orchard consists in the number of varieties it contains.

Every one owning a foot of ground should, if possible, set out trees or vines of some kind, so that all may enjoy fruit as one of God's cheapest blessings. But do not put out a single tree unless you intend to take good care of it.

I will close with an extract from the New York Tribune:

"It is a great folly to put off, as many do, the day of enjoyment until all the mortgage is paid or such a sum is laid up in the bank. To be sure, it is very desirable to have the mortgage paid off and something laid by for a rainy day, but it is as desirable to have a good time while one is doing that work, and to make sure of enjoyment as one goes along. Many a farmer and farmer's wife work now so hard that when the time comes for them to take comfort they have no capacity in that direction. Infirmities gather about them, or avarice, the besetting weakness of old age, robs them of the power to enjoy. A home, where the scarlet strawberry ripens in abundant luxuriance, where luscious raspberries drop melting into the mouth, where blackberries quench the thirst of August, where purple grapes make merry the heart in September, where peaches, and pears, and apples prolong the harvest joy into the months of snow and ice, is not likely to be deserted for the barren street of cities; for the disposition once set in the way of providing these luxurious enjoyments will not be satisfied without the addition of whatever else will make the home a delight and joy, a place to be sought, and an abode of constant peace."

Discussion followed on tree planting.

Mr. Harvey Smith.—In planting I would not pack clay soil very close to the roots of the trees. If trees are brought in the fall from the nursery, they should be planted in a sand pit as turnips are, until spring. There they will escape the ravages of winter.

Mr. Dickinson.—In selecting trees from a nursery the buyer should note the growth of the previous year. If the growth is good and well matured, the root is healthy and good. Select straight trees, not over three years old, and be sure not to look for large trees, but for trees with a good growth the previous year.

Mr. DeCou.—I set 243 trees one year ago, taken out of the nursery, and lost but one of them.

Mr. S. Smith.—In cutting back trees I would not cut back quite as far as the roots were set in the nursery.

Mr. Suttle.—I have planted 2,000 maple trees for shade trees in this city, and they are all doing well. In cutting back I leave a few of the branches at the head, cut back, and find the trees do better than if tops are sawed off below all the branches.

Mr. Ed. Munson.—Thousands of fruit trees are destroyed or damaged when bought in the fall because they are not properly trenched.

Mr. DeCou.—I do not believe in buying and planting trees in the fall. The wood is not likely to be well developed if they are moved too early, or else, taken too late they are in danger of freezing in the boxes while being transported. It is double the work, too, for it is as much work to dig a trench as to set out the trees.

H. R. Pierce, of Walker.—I lost 300 peach trees which were shipped to me in the month of April by their freezing while on the way.

Mr. W. K. Munson.—Had Mr. Pierce put the boxes in his cellar, and thus caused the trees to thaw out slowly, they would not have been injured.

Mr. Dickinson.—My experience is that orchards on slopes with a southern inclination are more liable to injury from severe winters than those with a northern or western inclination. I think a northern inclination the best for any orchard.

The committee appointed to recommend a list of apple trees suitable for cultivation in Kent county, in view of the cold winters of 1872-3 and 1874-5, made the following report, which was accepted and adopted:

MR. PRESIDENT—Your committee appointed to recommend a list of apple trees suitable for cultivation, beg leave to report that they have given the matter due consideration, and herewith present two lists for the consideration of the Society,—the first for market purposes; the second for amateur cultivation:

FOR MARKET—WINTER APPLES.

Red Canada.....	30 in 100
Ben Davis.....	10 in 100
Jonathan.....	10 in 100
Northern Spy.....	10 in 100
Wagener.....	10 in 100
Peck's Pleasant.....	20 in 100
R. I. Greening.....	10 in 100

AUTUMN APPLES FOR MARKET.

Autumn Strawberry.....	10 in 100
Gravenstein.....	15 in 100
Lowell.....	10 in 100
Maiden's Blush.....	25 in 100
Twenty Ounce.....	20 in 100
Beauty of Greece.....	20 in 100

SUMMER APPLES FOR MARKET.

Red Astrachan.....	20 in 100
Duchess of Oldenburg.....	20 in 100
Golden Sweet.....	10 in 100
Keswick Codling.....	10 in 100
Primate.....	20 in 100
Sweet Bough.....	10 in 100
Early Harvest.....	10 in 100

FOR AMATEURS.

The committee recommend the cultivation of the following varieties by amateurs for summer, in the proportion named: Early Harvest, 2; Duchess of Oldenburg, 2; Early Strawberry, 2; Golden Sweet, 2; Keswick Codling, 2; Primate, 4; Sweet Bough, 2; Sops of Wine, 2.

Autumn Apples: Pomme Royal (Dyer), 4; Autumn Strawberry, 4; Fall Pippin, 2; Snow, 4; Gravenstein, 4; Lowell, 4; Maiden's Blush, 2; Beauty of Greece, 4; Twenty Ounce, 4; Chenango Strawberry, 6; Fall Jenneting, 4; Hawley, 6.

Winter Apples: Baldwin, 2; Jonathan, 2; Golden Pippin, 4; Hubbardston's Nonsuch, 4; Lady Apple, 2; Mammoth Pippin, 2; Northern Spy and Wagener's, 6; Peck's Pleasant, 6; Canada Red, 4; R. I. Greening, 4; Seek-no-further, 2; Talman Sweet, 2; Lady Sweet, 2.

Mr. Merriman, at the May meeting, read the following valuable paper on the

POMOLOGICAL AND HORTICULTURAL USES AND BENEFITS OF PLASTER.

The results that we know are produced by the use of plaster either upon our farms or in our gardens and orchards, are too widely known and too obvious

perhaps to require that more should be laid before the public concerning its really wonderful effects; still I am inclined to believe that we have much to learn of the *benefits to fruit growers*, of the use of land plaster, or that its advantages in this direction at least are not widely enough known. If what I may be able to lay before you to-day shall result in stimulating a more extensive and general trial of one of the greatest of helps to the fruit growers, and one so cheap and easy of cultivation, my object in this article will then be accomplished.

I shall not attempt to explain just how this specific fertilizer produces the astonishing effects we find resulting from its being applied at just the right times, and in the proper manner and quantities. It is easy to understand these results for we see them, but the how, and why, of its *modus operandi*, are much more intricate and difficult questions, but of far less consequence to practical men. We can afford to allow them to remain, as they have thus far, mere matters of theory.

Half a dime's worth of gypsum sown through the top and branches of fruit trees in full bloom, often proves the making or saving of the whole crop. It should be sown while the early morning dews are still on, or after showers, and be dusted lightly upon the blossoms and leaves where it will adhere. This has often been demonstrated by taking alternate trees, and in many other reliable ways, to the undeniable saving of the crop, and in other cases to its increase many fold. I will not claim that such are always the results. These are not uniform; on the contrary they are many and various, but it is probable that in all cases the crop would be larger, fairer, and less affected by insects. Men may push their ban of contempt and "absurdity" down upon these facts, because they "cannot see how" these results are accomplished, or some of them, and therefore neglect its application. "A word to the wise" is not enough for them. But they are not the ones afterward to be laughing in their sleeves at the careful, thoughtful farmer who sowed plaster over his orchard blossoms just before or at the beginning of the week of the dreaded cold, drying, easterly wind, or northerly, or whichever has proved the most deadly in his particular locality. These vary, and the experience of each section of country has demonstrated which it is. The shrewd, practical orchardist who has so reasonably sown his blooming rows with gypsum, was duly armed and equipped against this deadly attack upon his crop, as also against several other emergencies quite as likely to arise, fully as imminent to his fair hopes, and the bright promise from his bounteous, bloom-laden lands and trees.

This gypsum or land plaster seems to possess the power or property of creating or causing an artificial humidity of its own, among many other things, necessary to the plant or to the embryo fruit to which it may be applied, and so fixing and controlling the ammonia, the gases, the vapors of the atmosphere, as to carry them triumphantly through the various crises of our capricious climate and seasons generally, and also to aid them materially in their fearful warfare with the ever multiplying insects and pestiferous vermin of legion tribes. We shall probably some day know the chemical and scientific explanation of these things, but not now, nor is it requisite. We are after practical results, and we leave the philosophical study and investigation of its methods of work to each man for himself.

A few days ago a fruit grower asked me what he should do to obtain a crop from a fruit tree that had always blossomed profusely every year, but had never borne any fruit. The answer is sow gypsum over the blossoms and occasionally over the setting fruit.

I asked a successful grower of Plums and Apricots by what method he fought the curculio and saved his crop from this destructive little demon among fruits. He replied that he "never fought the festive little cuss except by sowing plaster in his trees in the early morning and after showers." His teeming orchards confirmed all he could claim for his system, and he was widely known as the most successful producer of those, in this climate, rare and delicious fruits, in his section of the country,—Central New York,—with a climate almost exactly like ours. He would have plaster if he had to pay ten times the going price for it.

As might be expected, the effect of plaster and its best mode of application vary with the different fruits. Upon Strawberries it should be very light; upon Raspberries and other berries, Currants, Grapes, Cherries, and other stone fruits, Quinces, and other seed fruits, a heavy application is advisable, and should be repeated occasionally through the setting and formation of the fruits.

To those who desire to increase the verdure, vigor, and freshness of the lawn and pastures, plaster is invaluable. The only possible drawback is the stimulation of an over-production, which, if always removed from the land and never paid back to the soil, might at last impoverish it. I was yesterday discussing this plaster question with a Granger, who said he had never used a pound of plaster on his farm, but he had heard that if plaster was continuously used on the land it would stimulate the growth of crops so much as to "run out the land" after a while. I could but reply that of course the heavier the crop is that you take from the land without feeding anything back to the soil, the more exhaustive it is to its strength and fertility.

It is perhaps futile to argue the case with men who do not wish to increase the growth and products of their lands, nor the fertility of their soils; but to those who delight to enrich their poorer soils and greatly promote their productiveness by the readiest and least expensive method, the means are furnished at our very doors. A very clear conception of the facility and explanation of the easy and quick fertilizing of even poor soils by the use of plaster on clover, which is plowed under to enrich those lands, is found in the fact that seven-eighths of vegetable growth in weight and composition, is composed of and derived from water and the various gasses of the air, and one-eighth from substances of the soil,—facts demonstrated in agricultural chemistry.

PROPER CARE FOR SHADE TREES.

Mr. George W. Dickinson read a brief paper on the "Proper Care of Shade Trees," from which we extract as follows:

While riding through this beautiful city (second in the State in point of population, and first in enterprise and manufactures), what do I behold? Standing in front of handsome dwellings, dry poles, once a maple tree, now a hop pole (a stranger would think you were all in the hop business). My heart sickens within me to see the carelessness and ignorance on the part of the setter. What does all this mean, from four to fourteen dry poles standing on a space of fifty feet wide from two to three years, or long enough for some of them to rot off and fall down? These poles will number, no doubt, thousands in this boasted city. The remedy should be to procure trees from responsible men and not take them until the buds begin to expand a little (from the 20th of April to the 1st of May, this year), then they will not bleed at the wounds necessarily made in taking them up.

The White Maple is best adapted to the sandy soil around this city. If the

setter warrants your trees to live, have the time extended to the third spring. Then if they show a healthy foliage it is safe to pay the man for setting them. A guaranty for one year is nothing: for a maple tree has vitality enough in its trunk to throw out the leaf if all the fibrous roots are dead when set. Mulch with chip dirt, tan bark, or some coarse material, as soon as the trees are set, to retain the moisture around the roots. Build a high protection around the trees, that horses cannot reach above, and guard against boys and careless men who leave their horses without hitching. The least wound upon the trunk of a maple tree when the sap is dormant will ultimately ruin it. It will never heal, and the wood becomes dry and brittle, and will break off when the top becomes heavy, and your tree, perhaps ten or fifteen years old, is gone.

Doctors should hitch their horses to posts set in the ground for that purpose, and not to our trees. Delivery boys should be careful that their horses do not girdle our shade trees. The laws of this State are very severe on those who injure shade trees, either carelessly or maliciously.

Something of a discussion followed on the subject matter of the paper: most of the talk was very useful, but only a few sentences, relatively, can be given.

Mr. Knapp.—Borers are the cause of the death of two-thirds of the maple trees set in this city, the second year after they are transplanted.

Mr. Suttle.—There is an objection to using chips or coarse chip manure for mulching. The borers work in them for a shelter, and then destroy the trees. Mulch the trees with straw or manure.

W. N. Cook.—One serious difficulty in transplanting trees is the habit of getting those that are too large. It is seldom that trees more than two inches in diameter live. My experience,—and the shade in front of my house is the fairest on Lagrave street,—is that it is better to make haste slowly in growing maples. And in setting them they should be well protected from roving stock and all manner of damage. I have found that, though I set my trees but once, I have had better luck than some of my neighbors who have set out trees seven or eight times since then.

Dr. Sala Smith.—One trouble with transplanted trees is their danger from a disease of the bark from too great heat upon the exposed or unprotected trunk, similar in its nature to *eczema* in human beings. When trees are transplanted they should be protected from the direct rays of the sun at the southeast exposure, until their tops grow enough to shade and protect them. Many trees owe their death to sun scald, and the resulting evils. Borers are almost sure to work in trees whose bark has been so affected. Excessive cold is quite as bad as too great heat. The cold of the winter of 1872-3 killed many forest trees: even the oak grubs, in some localities.

Mr. P. W. Johnson.—In transplanting trees I select those that are exposed in the forest, and then try to set them so that they stand, with reference to the points of compass, just as they did before transplanting. The southeast exposure of the tree is the toughest, and that fact should be remembered.

President Bradfield stated that he had tried unsuccessfully during the past four years to grow maple trees. He thought all maples were injured by the cold winters of 1872-3 and 1874-5.

SECRETARY'S REPORT OF THE ANNUAL FAIR.

To the Hon. President and Members of the G. R. V. H. Society:

The annual fair for 1876 is a thing of the past, and I can but congratulate you, one and all, on its having been the grandest success of any fruit exhibi-

tion ever held in this valley, numbering in its entries 1,010, against 571 in 1874, and 575 in 1875, falling only 218 entries short of the great State fair in 1873, held in the same hall, and being 339 more than the entries at the State fair held at Saginaw in 1874, and I venture to say the quality of the fruit shown has never been excelled, and had the fair been held two weeks earlier, there would have been the finest and largest display of peaches ever exhibited in this section. As it was, the display was fine, but small. I would call the attention of the Society to the importance of holding their fairs at least two weeks earlier.

Three entries were made that were worthy of favorable mention, for which no premiums were offered, viz.: P. D. Sneathen, of Boston, Ionia Co., a collection of apples grown in 1875, embracing Golden Russets, Roxbury Russets, Jonathans, and Baldwins, in good state of preservation; the Russets having been preserved with care, the others had been overlooked in the bottom of a barrel, and came out fresh and nice.

The exhibition of dried tomatoes, pumpkin, and sour and sweet apples, by Mrs. J. D. Husted, of Lowell, was superior, and never excelled by any process.

Henry F. Sadler, of Byron, exhibited as fine a plate of Sweet Chestnuts as one desires to see, also a branch of chestnuts, and a bush heavily loaded with Barbary berries, showing that it is only necessary to plant the seed to secure a bountiful supply of those desirable products.

The interest in the Floral Department was greatly enhanced by the lively competition between Messrs. Sharp, Rowe, Suttle, and others, and the display of flowers was very fine.

The disbursements for premiums amounted to \$515.75. Adding to this the necessary expenses of the fair, amounting to \$40.76, the total expenditures were reckoned at \$556.51.

The fair was held in connection with the Kent County Agricultural Society; and, in conclusion, allow me to say that it is my conviction, on mature deliberation, that it is for the best interests of all that this Society should continue to hold Union Fairs with the Kent County Agricultural Society, as their interests are mutual. In union there is strength. The advantages of this policy are numerous. It involves no great risk; the hall is certain; the money to pay the premiums is very nearly certain; the people to look at the exhibition are certain to come. They come to look at the stock, the horses, the manufactures, the machines, the poultry, the vegetables, and they also look at the fruit and the flowers. Thus we secure an audience,—we get a hearing,—we reach thousands that otherwise we should not reach or attract. We teach a multitude that otherwise would remain in ignorance of the fact that fruit growing is a real and important interest in this valley. All of the arrangements made to secure the success of the Agricultural Society are also made for us. We are to no trouble about that. Let us then cultivate pleasant relations with the officers of that Society, to the end that the very best possible results may be obtained.

The experience of the last year has shown that we cannot control our premium list under the sum of \$800 without injuring its usefulness. Money makes a fair; the more premiums the larger the fair. The proper way is to put money into premiums to insure success.

SOUTH HAVEN POMOLOGICAL SOCIETY.

OFFICERS.

President—Henry E. Bidwell.

Vice President—J. G. Ramsdell.

Secretary—Alfred G. Gulley.

Treasurer—Henry Caulfield.

Librarian—Almon J. Pierce.

Entomologist—Alfred Fitch.

Ornithologist—L. H. Bailey, Jr.

The following are among the papers read before the Society during the year:

DRAINING.

READ BEFORE THE SOUTH HAVEN POMOLOGICAL SOCIETY BY A. G. GULLEY.

A writer for the Country Gentleman says three things are necessary to make a farm pay: First, manure; second, *manure*; third, *a little more manure*. A correct idea. But to get the full benefit of that manure, at least one more is needed,—thorough draining. By this we mean a complete system of under-draining with tile, for no arrangement of open ditches, box, stone or log drains can be called thorough.

Before proceeding to the manner of making drains, it may be well to consider a few of the objects obtained. The first and great object is to dispose of all surplus waters, whether that from rains, spring, or flow from adjacent lands. On undrained lands this surplus runs off on the surface if rolling, evaporates, or slowly settles through the soil. When this water is from springs it is to be disposed of in the quickest manner possible, but with rain waters we have more to do. When it first falls it is heavily charged with elements that enrich the soil if it passes down through it, and not allowed to run off on the surface, for those valuable elements leave the water as it filters through the soil, and we gain the third point above mentioned,—a little more manure.

If we depend on evaporation to remove the surplus water what is the result? Water changing into vapor takes up a large amount of heat, and when the surplus is disposed of by drying up, a great deal of heat is lost from the soil. Of course a great portion is drawn from the air, but when we remember the heat produced from ten tons of coal is required to evaporate an inch of rainfall from an acre, it is plain that a large amount must be lost from the soil. Take any low piece of land from which the water must evaporate to become dry, and it will be found to be cold, wet, unproductive soil.

We have already seen that rain soaking through the soil enriches it. They also tend to lengthen season. Our drains begin their labors as soon as the frost leaves the ground, indeed they have been busy all winter. The cold water in the soil at the opening of spring immediately runs off through the drains, to be followed by the waters of the warm spring rains, which in passing through leave its heat, the sooner preparing it for the seed. For the same reason we can commence our cultivation sooner, as the land soon dries and is ready for work. I have seen land, naturally dry, that is plowed each year a week or ten days earlier than that adjacent, not drained, yet the same kind of soil. Spring rains

warm the soil; summer rains act differently, but still for our advantage. Then the surface is hot, probably too hot for the crop, the water falls on it, takes up its heat, cooling it, and carries the heat further down to the roots of the plants, where it is needed to give them greater growth. Underdraining also enables us to abolish open ditches, the most unsightly and untidy objects on a farm, a great annoyance in cultivation, and a useless occupation of valuable land.

To one not familiar with under-drained land, the most surprising effect is produced in a drouth. His first thought is everything would dry up. But is that the case? Let us see. There is at all times the same amount of water, either on the ground or in the air as vapor. The soil being very porous, the air at all times circulates freely through it. The drains help even in this circulation. The air cools when in contact with the ground, and the vapor condenses, and is left in the soil. This action is continually taking place, so a large amount of moisture is deposited. Good farmers know that stirring the soil during a drouth helps a crop. It is simply because the soil is exposed to the air and the vapor absorbed from it. Further, the soil is dry and warm for a considerable depth. As a result, plants root much deeper to where it is at all times moist and beyond the influence of dry weather.

As a rule, all land needs draining, about the only exception being a light soil resting on gravel, and the latter coming to the surface considerably lower than the general level of the land. Many think because land is rolling it does not need draining. We have already shown how it may be benefited. Several thought I was foolish to think of draining my land along the lake. It is dry now, they said. I laid a main of nearly fifty rods, about four and one-half feet in depth. I struck running water the whole length nearly a foot above, and that with a fall of four feet for the fifty rods. The drain passed near a low spot, only thirty inches above it, through which I put a lateral and found water there, and it had been there all summer. It evidently needed draining very much.

In draining, a plan of the complete job should be made before the work is begun. If the field is nearly level it can be easily laid out, but if rolling or irregular, great care is necessary, and the plan more intricate. To know the size of tile we must estimate the amount of water to be carried off, although the error of using too small tile does not often occur, yet if too large is used useless expense is incurred, and the value of the drain impaired. The plan should aim to have the mains as short as possible, they being more expensive than the laterals, and to a certain extent their value is lost by doubly draining the land. By mains, of course is meant those drains that collect the water from the branches or laterals, and convey it to the outlet. The laterals ought to be as near parallel as possible, and on hilly land should run direct from top to bottom. They will then tap any water bearing strata that may crop out on the slope. Should they be laid obliquely down they could draw only from the upper side, so losing a great part of their power. The character of the soil has much to do with the distance apart which they should be laid, but at a depth of three and a half to four feet, and they ought never to be less, four rods is the outside limit. If the soil is heavier they must be nearer.

D. M. Ferry, of Detroit, has a seed farm there of over three hundred acres all drained, the laterals two rods apart. Originally it was a very stiff clay, but this with good cultivation has changed it to the finest of garden mold. In all ordinary draining two to three inch tile are large enough for laterals, and three to five inch for mains, the latter sizes only when a large amount of water is to

be carried off. Round tile are the best, for no matter whether a large or small amount is running in the tile, it will be concentrated in a stream and not allow sediment to settle on the bottom. They are also more convenient to lay, as they can be placed in any position to make tight joints. The maxim that "work worth doing at all is worth doing well," is well illustrated in laying tile, for the whole success rests on laying them well. Care must be taken to have the fall continuous, as a rise is fatal to the drain. Where the land does not easily cave in, the ditches may all be partially dug before hand, but not finished till all ready to lay the tile, then take out and grade the bottom and immediately lay the tile. If the bottom is clay, or dry and hard enough to make a good foundation for the tile until the soil is settled around them, but little care is needed except to see the grade is perfect, but when it is wet, sandy, or soft, the job is greatly increased. In a drain I laid this summer I found it necessary to lay a board the whole length, so insuring a true grade and solid bottom. Even when the ground is generally hard, boards may have to be used in springy places.

We are now ready to lay the tile. Begin at the head of the main, put them in one by one, turning them till they make a perfect joint, then place over each joint a thin strong sod just long enough to cover the tile, and about four inches in width. Other materials may be used, but of several I have tried this was the easiest obtained and applied, its only use being to prevent the dirt working into the tile until it is well settled around the latter. All openings for laterals must be put in as the main is laid so as not to disturb it again. This is done by making the opening and laying two or three tile of the lateral, closing the upper end with a block, and when the lateral is put in it can be laid from this joint. After the sods are put on, a man can follow, putting in a little dirt, working it in carefully and tightly around the tile. Only enough need be put on to cover them a few inches, then the ditch filled at leisure. The one laying the drain should have an assistant so that he need not get out of the ditch from one end to the other. If the drain is a long one or a sharp curve is made, a well or basin at the middle, or curve, will be beneficial to allow the sand in the drain to collect and settle there, then the water pass out on the other side. Of course it must be a little deeper than the drain, and may come to the surface or not. A well of this sort at the head of a main is advisable, in which we can flood the drain if we have reason to think it is not running as well as it ought. As a rule, give drains all the fall possible, the surer the success, and the quicker will large amounts of water pass off. But, when necessary, they can be laid with very little fall. I have put them in with less than three inches to a hundred feet. About one inch per rod is sufficient with ordinary care.

It is not easy to estimate the cost, as it will vary with soil, depth, size of tile used, etc. In the main I put in this summer, it cost more to dig the upper twelve rods than the other thirty-five, all of the same depth, owing to the difference of soil. Tile cost from twenty to fifty cents per rod, and the digging and filling from thirty to seventy-five cents, making the expense of field vary from \$25 to \$60 per acre. Waring puts it at \$50, but that is too high for this part of the country.

Now comes the question will it pay? Can we invest so much money in drains and get a fair return? We will see what those who have tried it say. Mr. Johnston, who did about the first tile draining in the United States, says it will pay interest and principle in two years, in increased crops. He speaks of one

field of ten acres he bought to get an outlet for his drains, and paid for the land with the drains out of the first crop of corn. Before draining it would produce nothing. On another piece of twenty acres, by investing thirty dollars per acre in drains, he changed the yield from ten to eighty-five bushels of corn. Of course these are exceptional cases. But I know of one instance where an open ditch was replaced with tile, a main at that, and the whole expense paid by the crop the next year on the land previously occupied by the ditch.

The main I laid the past summer will change an unsightly ditch into a road on the line between myself and neighbor, giving each more land to cultivate, and stop the growth of a large amount of weed seed. Had it been put in last fall instead of now, the expense would have been more than paid by the increased yield of a piece of strawberries lying along side, as they were badly killed out by water standing on them late this spring, which it would have carried off. Many such instances could be given, but this is enough. Let any one give draining a fair trial, and he will be convinced it pays, and pays well.

A. G. GULLEY.

October 14th, 1875.

GENERAL CULTIVATION OF FRUIT TREES.

READ BEFORE THE SOUTH HAVEN POMOLOGICAL SOCIETY, BY J. G. RAMSDELL.

Knowing as I do that very many experienced and practical fruit growers are listeners to what may be said on this most important of all subjects connected with fruit growing, it is with some diffidence that I appear before so intelligent a body as an instructor or teacher in practical Pomology. Yes, practical Pomology; for of what avail are all the fine spun theories not based upon practical knowledge and experience?

I need not say to my brother fruit growers that this question of general cultivation of fruit trees is a very broad one. When we consider that it includes Apples, Pears, Cherries, Peaches, Plums, and Quinces, and in this particular locality, may also be said to take in Apricots, Nectarines, Almonds, and Figs, and nearly every variety requiring different treatment, as applied to various soils and locations, I think I am very safe in arriving at the conclusion that this is most certainly a very broad subject for as short an essay as this occasion will permit. How few fruit growers even among those who make a specialty of it can say in truth that they are doing the best they can in cultivating their fruit orchards. I think it would be safe to say, not one in five. One man may say that he cultivates his orchard thoroughly, but thorough cultivation is one thing and intelligent cultivation is quite another. I have known farmers (and some of us fruit growers are only farmers on a small scale) who may be said to cultivate their orchards enough, but when we look at the trees can we say they have cultivated them intelligently?

Look at the poor starved trees standing on a thin or light soil with nearly all their surface roots broken off by the plow, and from necessity compelled to depend on still poorer subsoil for their support. Now, let us consider briefly the most important part of all trees, but more especially fruit trees, and that is

SURFACE ROOTS.

As a rule, surface roots are totally ignored by the fruit grower. He plows in his orchard the same as he does for corn or potatoes, nor does it enter his head that surface roots are at all necessary for the full growth and perfect

development of a fruit tree, or still more necessary to bring the fruit to its highest perfection.

I believe it is often the case that more damage is done by a single plowing of an orchard than can be restored in ten years. I am aware that fruit men, as well as farmers, differ on this subject of cultivation.

One holding that the plowing of all orchards to the depth of one foot or more is the right thing to be done, and that an orchard will grow all the better for it. Another taking the opposite theory that fruit trees as a rule do better in grass, and bear with more regularity, provided the ground is enriched by applications of compost on the surface. Neither of these theories are safe guides that can be followed by the successful or perfect fruit grower. They are exceptions to the general rule and cannot be adopted. Deep plowing and cropping may be practiced on a very strong gravelly loam which may be said to have a perfect drainage and no hard subsoil. The trees may make a fair growth if the fertility is kept up, but I think it will be found that the fruit will be deficient in flavor and size.

I once knew an apple orchard of forty or fifty trees scattered over about four acres of ground that had been plowed very deep for twenty-three years in succession and cropped with wheat, corn, and oats in rotation. The trees produced fair crops of apples nearly every year, but the fruit was deficient in flavor. The varieties were Greenings and Roxbury Russets. What was the secret of the trees bearing full and regular crops of fruit? It was this. The roots went down into a strong deep gravelly loam which had no subsoil to the depth of eight or ten feet. This soil had perfect drainage, and consequently was warm and moist, but never wet summer nor winter. The roots of these trees gathered so much moisture and nourishment from the deep porous soil filled with limestone and gravel, that they were not dependent upon the surface roots for support, so that cropping and plowing was not so injurious as would have been the case on a light soil, or a very heavy, hard clay subsoil. It is plain to be seen that if these trees had been planted in a poor sandy soil where the chief support must be supplied through the surface roots fertilized by applications on the surface, or had they been set on a hard clay subsoil retentive of water in the winter, and little or no moisture for the lower roots to feed upon during the severe drouths of summer, they would have died outright before they had been planted ten years, or cumbered the ground with a miserable existence.

THE GRASS THEORY.

Strange as it may seem there are many who are considered intelligent fruit growers who are advocating this theory, and cite some very strong cases of success under this mode of treatment. But I am inclined to the opinion that upon further investigation these cases of successful fruit raising in grass are exceptional, and never can be adopted as a rule. I will admit that standard Pears and Heart and Biggarreau Cherries may often succeed with the land laid down to grass on good strong loamy soil, moist but not wet, plowing very shallow once in four or five years to keep the ground from becoming sod bound, and top dressing occasionally after they begin to bear heavy crops of fruit.

Apples, Peaches, or Plums will never be a perfect success under such a course of treatment. They may bear well for a time, but they soon fail in vigor of tree, and consequently in the perfection of their fruit, for they are much more dependent on their surface roots than Pears and Cherries.

Let me say to the fruit growers of South Haven and elsewhere, beware of

this grass theory; it is not a safe rule to adopt in the general cultivation of orchards. As I look at it this is a matter of common sense.

Does it look reasonable that an orchard bearing heavy crops of perfect fruit, can also raise a crop of grass that absorbs all the moisture from the ground during an ordinary drouth. I believe more fruit trees, old and young, have died within the last twenty years for want of moisture in the soil than all other causes combined. We talk of top dressing the ground and keeping it rich, which is all very well when trees are bearing heavy crops of fruit: but we may do all this, and if the ground lacks a good degree of moisture, both tree and fruit will fail. I should as soon think of getting large crops of perfect fruit (especially of Peaches, Apples, and Plums) where the ground was covered with sheep-skins, wool side up, as from an orchard covered with an old sod of June or blue grass. I never plowed a piece of old sod any time during the summer months that had any moisture in the ground to speak of, but almost invariably as dry as powder. There are only a few seasons in the lifetime of a fruit tree when there would be a sufficient amount of moisture under such a sod necessary to the growth of the tree, and in the same season bear a perfect crop of fruit. Some one will say, "Do you expect a perfect crop of fruit every year?" No. But if everything is done which is necessary to be done, such as proper pruning, destroying insects, etc., in order to insure a perfect crop, it would be the height of folly to have a failure for the sake of getting a small crop of grass that robs the trees of the necessary amount of moisture. Finally, we may be sure of one thing, if we do not rob the ground of its natural moisture by straw crops, grass or weeds, and other things being done necessary for a perfect crop, the failures will be the exception, and not the rule.

MULCHING VS. CULTIVATION.

Perhaps there are no two practical theories connected with fruit culture in all its various branches that have been so widely discussed, enlisting so many able advocates on both sides, as these two subjects of mulching and thorough cultivation.

Let us briefly consider some of the arguments for and against both of these theories, and by rejecting some of each, we may be able to arrive at a proper conclusion of the whole matter.

WHAT ARE THE CHIEF BENEFITS OF MULCHING?

The practice of mulching may be said to be almost indispensable to all fruit trees during the first year after they are planted in the orchard, but more especially if it is done at the time of setting, or very soon afterwards. It is a very great protection to the roots during a drouth by keeping the soil in a fine tilth and holding the moisture during the hot dry weather of the summer months. Not only is it a very great protection to young trees in summer, but it is absolutely necessary to be applied in some form for the protection of the roots of all fruit trees through the vigorous changes of winter. Clean culture of fruit orchards and allowing them to remain so during the winter in our very changeable climate, is too hazardous to risk, and often proves very destructive. It would be better, if we must choose between the two, to adopt the grass theory, and top dressing, but both systems should be discarded by the grower of perfect fruit. So much has been said on this subject of mulching, that it would seem no one who has paid any attention to the subject could be misled. Yet, I fear that some who are now practicing mulching will, after a series of years,

find that they have made a sad mistake. I refer more especially to the kind of material used on different soils.

While I would recommend some which are generally used, I would in nowise adopt all of them on all kinds of land alike. In practice for a term of years it has been found that pine or hemlock saw-dust is a positive injury to the soil, but more especially if it is of a sandy or a light porous nature. The trees may derive a benefit for the time being, in the use of saw-dust by the retention of moisture, but after successive and heavy applications it will be found to be a positive injury to the life and strength of the soil. If the soil is light and porous, and the saw-dust has been applied in sufficient quantities to become fully incorporated into the soil, it will most certainly be an injury by rendering it too dry.

Now this may seem like a contradiction of terms, but can only be explained by citing the fact, that while one or two applications on the top of the ground is allowed to remain undisturbed it proves beneficial in keeping the ground moist, but on the contrary, when frequent applications have been made and worked into the soil by the plow and harrow, it will become a positive injury as an absorbent of moisture. Hard wood saw-dust is not so bad, and occasional applications are beneficial to most soils, but more particularly to heavy clay. Yet if too much is put on, it will be productive of sourness and generate fungi, which will render the roots unhealthy and injure the fruit.

The same objections apply to tan-bark as to saw-dust, and when either of these materials are used it would be better to pass them through the stables as an absorbent.

After considering the benefits of mulching and showing some of the objections under certain situations, the question to be decided is: Can we safely rely upon any system of mulching during the lifetime of a fruit tree, as the best mode of cultivation, insuring sound, healthy trees and the most perfect fruit? If only the growth of the trees were to be considered I should answer yes, but when the question of perfect fruit is to be taken into the account I must say no, for the following reasons:

First, After the system of mulching has been adopted for a few years, as a means of cultivation it can not be safely changed for any other. I mean where the mulch has been put on from year to year and left on summer and winter in a sufficient amount to keep the grass and weeds from growing.

Second, If we undertake to plow such an orchard we find the main roots which are the chief support of the tree, and productive of fruit, must be broken, for they invariably lie on the surface of the natural ground, and just under the heavy mulch. This renders good cultivation with plow and harrow ruinous. If we strip this mulch off entirely we shall be obliged to replace it with some kind of top dressing, or soil itself, otherwise the roots will be ruined by the excessive heat of summer or the frosts of winter.

We can not make a forestry of a fruit orchard, however much we may theorize about imitating nature, and nature's mulch, for we will find that a mulch of decayed leaves so valuable to a dense forest of shade is one thing, and that of a fruit producing orchard, exposed to a broiling sun and drying wind is quite another. These are some of the objections to the mulching theory, but a still greater objection is that it affords the most complete refuge for all manner of insects and vermin that creep and crawl.

If I wished to make a perfectly safe hiding place where the codling moth, curculio, and legions of the insect tribe could dwell in perfect peace and destroy

our fruit unmolested, I would mulch my orchard heavily and let it lie from year to year. It must be evident to every fruit grower's mind, that examines this subject fairly and candidly, that this mulch which has its exceptional benefits, must, when practiced independent of other modes of cultivation, bring disaster and ruin to the fruit grower.

WHAT ARE THE BENEFITS OF THOROUGH CULTIVATION?

I don't believe that *man* ever has or ever will devise any method or scheme by which he will be enabled to subvert the divine command given to Adam when he was placed in the garden of Eden, to "dress the soil and keep it." I wish I was competent to write a volume on this subject of thorough tillage. This and complete drainage are the basis of all successful fruit growing, if properly and intelligently carried out.

The benefits of cultivation by the use of plow and harrow, fork and rake are so many that it leaves no room for any very formidable objections, which to any mind can not be overcome. Very much depends upon the implements used, and also the applications of the various fertilizers which are necessary to successful fruit raising. Now we come to the practical question,

HOW SHALL WE CULTIVATE OUR ORCHARDS?

While an orchard of any kind is young (except standard Pears and Cherries), and until it commences to bear heavy crops of fruit, it is well to plow deep between the rows so long as we do not interfere with the young roots. But as the trees get larger we must work more shallow and farther away from the trees, so that when an orchard has been set ten or twelve years the plowing should be done with one horse, and not more than four inches deep. This plowing should be done both ways to and from the trees, three or four times before the middle of July, and harrowed with a fine toothed harrow at least one dozen times before the first of August. If the teeth of the harrow are not more than six inches clear of the beam and are bent so as to slant a little backwards it will not injure the roots below the plowing, and that will give the roots the full benefit of the rains and dews as well as the top dressing of compost whenever it may be applied. If a cultivator is used, it should run very shallow, not deeper than the plowing, for the nearer we can keep the roots to the surface of the ground undisturbed, and at the same time well fertilized, the more perfect will be the fruit. I would have this cultivation so thorough that no weeds or grass could be found growing to rob the trees of moisture. I hardly think the codling moth would find a safe place for the sole of his foot, bands or no bands on the tree. But to make sure I would scrape the trees every year and wash with lye, and thereby destroy all hiding places where he could spin his cocoon. I would keep as many pigs and chickens as possible fenced into the orchard where it was practicable, otherwise I would resort to the band and chip process, and make it a war of extermination to be fought out on that line. But says one, "I thought you said clean culture was dangerous in exposed places in winter?" Most certainly; but not without a mulch of some kind. If the soil is properly worked, and moderately rich, I would sow oats or rye (should prefer oats), about the first of August over the entire orchard for a mulch through the winter. This does not cost so much as the straw, or hay, or saw-dust mulch, and is a better protector, as it keeps the snow from blowing away, and is a good fertilizer to be plowed under in the spring. It also allows of clean culture the first half of the season, when they need it most, and serves to check the growth early in the

fall, which is favorable to the production of sound fruit buds. This mulch is always clean at the time of fruit gathering, soft as a carpet, keeping the fruit that falls nice and free from grit, which is no small item. In a young orchard, which is liable to be attacked by mice, if the oats should get a very strong growth, as they may in a warm, wet fall, they should be mowed off before the snow falls, as they may furnish material for the mice to harbor in. Whatever system of cultivation may be adopted for the general cultivation of fruit orchards, the most important to be considered, perfect drainage, and yet sufficient moisture, fertility of soil, protection of roots in winter, thorough cultivation in spring and summer, and a war of eternal vigilance against preying insects.

TREE PLANTING.

READ BEFORE THE SOUTH HAVEN POMOLOGICAL SOCIETY BY H. DALE ADAMS,
GALESBURG.

Mr. President, Ladies and Gentlemen of the South Haven Pomological Society:

I am exceedingly gratified at being able to meet with you this evening and discourse about planting trees. My only regret is that some abler person was not chosen in my stead to address you. The subject is worthy the attention of the ablest and wisest, and possibly they might fail of doing it justice. The planting of trees has engaged the attention of nearly all nations of which history makes mention from the earliest record down to the present time. Nor is it to be expected otherwise, since the hand of Deity has furnished mankind with the first example by planting the tree whose tempting fruit proved so disastrous to our first parents, and thereby has well nigh ruined us all. Sometimes the planting of trees has been pursued as a matter of taste alone, at others from practical utility, and again from some absolute necessity, and from these various reasons or causes we find the practice handed down to our own time and to the present day. From the first planting in Eden it is but a step down to Babylonian times. If traditional history shall weigh aught with us, we find groves, and gardens, and avenues planted in exquisite taste, the fruits of which might vie with ours of the present day in lusciousness and beauty. The Romans, the Greeks, and the Persians before them, all had their gardens, groves and pleasure grounds. These were the resort of the philosophers and teachers of the classic age. Plato and his followers giving and receiving instruction beneath the shady groves of Academus are among the examples of which history has furnished us a record. All the civilized nations of modern times have encouraged the planting of trees. Executive and legislative authority have exercised their stern decrees, and many and liberal have been the appropriations therefor both as regards talent and money. Millions of dollars were spent by France during the reign of the first Napoleon in transplanting trees from the forests to the environs of Paris to ornament and beautify that gay capitol. Some of them we are informed were of immense size, requiring the strength of several horses to move a single tree. Nor has our own time and country been found far in the rear with this grand work, and should the enthusiasm of this day continue to move us on in this direction, the time is not distant when we may eclipse them all in the embellishment and beautifying of our parks, our avenues or highways, as well as the lawns surrounding our homesteads and dwellings.

Should any of you visit Fairmount Park during this centennial year and note

the progress and perfection attained since its commencement in 1859 or '60, I believe our astonishment no doubt would be great indeed. Many of the cities and villages of our own State are found well up in the scale of merit in this regard. Nor is the country,—the rural districts,—the home of the farmer and the husbandman, found behind in this respect. And what more appropriate recommendation in this centennial year could have been given by our worthy Governor than for every one owning a rod of ground to plant at least one tree. Never was a suggestion more timely and appropriate, and I believe none will be more generally observed. On all sides, from north to south, from east to west, throughout the entire length and breadth of our State we hear the response that the work preparatory has already begun for the fulfillment of this laudable enterprise. I hear of villages preparing to make Saturday next a holiday,—closing their places of business that nothing may interfere with the work of this day. Other states, Massachusetts, Connecticut, and New Jersey, and perhaps many others have caught the inspiration, and are preparing to follow our example in this respect. How fitting then it is that this work should be intelligently and properly done. It is not intended, I apprehend, for this to be a work of to-day only, but the work of an age, one that shall outlast the present generation, and the next, and possibly the third, and more. It has seemed to me, Mr. President, that the first step in our progress is to be the selection of species and varieties to be planted. Many of you have no doubt already fixed upon some particular kinds as most appropriate for the place and object to be attained. Our native forests and woodlands will be the resort for most of us to obtain our supply, and those that are known to be the hardiest and longest lived will be among the first in consideration, and you will pardon me if I mention a few of them. The elm, the oak, the basswood, the whitewood, the hard or sugar maple, and the white ash form examples in this class whose utility is mostly confined to their value for timber or shade.

The ash, whitewood, and elm form the most valuable in this class, where abundance of space can be spared; and among the edible nut-bearing species, under like circumstances, are found the chestnut, the black walnut, and some varieties of hickory, of which last Michigan furnishes few if any valuable varieties, at least so far as I am acquainted. The black walnut is the best of these. Where space is more limited, the white or soft maple forms the most desirable variety. And where we are confined to still narrower limits, the beech and the birch may be planted with good results. Among the foreign varieties I have become convinced there are none so valuable as the horse chestnut and some of the birches. I was formerly greatly in favor of the European variety of the mountain ash, but after giving it a trial of a quarter of a century in my own county of Kalamazoo, have learned to regard it with less and less favor from year to year, and now would not plant it all. These are the best suggestions I am able to give you in regard to our deciduous species. Let us now pay our respects to the evergreen class,—and first and foremost among our native sorts stands the hemlock spruce. There is no locality in our State where it will not succeed, unless it be some portions of the Upper Peninsula with which I am unacquainted. It adapts itself to almost any soil, from barren sands to the strongest clay,—from the naked rock, with scarcely soil enough for its roots to obtain a foothold, to the richest prairie. The densest in form when properly grown; the most lively and delicate in color of foliage; the most graceful, and oftentimes the most picturesque in habit. It is of all our native species emphatically the queen of evergreens. I regard first, last, and the only one of the fir

family worthy of planting as a centennial tree. Fortunately for you, gentlemen of South Haven, it is found in great abundance in your immediate vicinity. Among the foreign varieties in this class, and perhaps the only one worthy of our attention now, is the well known Norway spruce. Whatever meed of praise is due to the hemlock as a native, may with equal honor be awarded this foreign variety.

Indeed, so universally popular has it become that we may safely say, perhaps 9 out of 10 of the evergreens planted are of this variety alone.

In hardiness and adaptation it takes to our soil and climate "like one to the manor born." It forms the stoutest and densest screen, and bears the shears as well if not the best of any. When planted singly, or in connection with the hemlock, its stately, muscular form presents a pleasing and happy contrast. Years, and perhaps generations, shall pass away before a rival shall displace it in popular favor.

The white and Norway pine come next in order, and should be planted only where room is abundant and stately and rigid effect is desired. The most popular of the European varieties, where the conditions and effect just mentioned are to be required, are the Austrian and Scotch pine, except perhaps some of the new and rare varieties whose scarcity precludes our availing ourselves of them for this occasion. Of the two varieties last named, the Austrian pine is far preferable, and our native Norway pine so nearly resembles this variety in form and habit as to be often regarded as identical. In the planting of groves, the sugar maple will be found among, if not the most valuable of all the deciduous trees mentioned. The most striking example of a grove planted with this tree that has come under my observation is near the village of Schoolcraft, in Kalamazoo county, and with which many of you are familiar. It is nearly four acres in extent, planted in double rows 10 feet apart from tree to tree, in rows which are 20. The best data that I have obtained as to the time since it was planted makes it 35 years. Many of the trees are 20 inches in diameter, and the average height is at least 50 feet. It was planted on open prairie by the Rev. Wm. Taylor, an early settler and Baptist minister of that place, who was also founder of the church of that denomination and the seminary where some of you I believe received the finishing touches of your scholastic training. The seminary is gone; the church exists only in a modified form; but the grove remains an enduring monument to the memory of the man whose labor the present generation are just beginning to appreciate and future ones are sure to justify; and now, before we dismiss this part of our subject, the selection of varieties, would it not be well for us to cast a look among our fruit-bearing species and see if there are not some that bear a probability of withstanding the mark of time sufficient in warranting us in making our selection from them? I am forcibly reminded that their appropriateness will be in keeping with the profession and calling we have adopted as Pomologists. It is well known that some varieties of the apple and the pear attain to a remarkable age. Many of us here have seen the old pear trees of the Detroit river and Monroe, whose ages are authentically established as nearing their centennial birthday, if they have not already passed it. The apple trees of Monroe, too, some of us have seen, of which there is unmistakable evidence of having long since passed their 100th year. Thanks to the Hon. Edwin Willits, whose researches proved so interesting a feature to us as Pomologists at our meeting in June last. The apple trees in the Bartlet orchard he makes to be 125 years old. The Dansard tree, and those in the lot of the late Judge Warner Wing, and also the two in the rear of the residence of

I. E. Ilgenfritz, are shown to be nearly 100 years old, and show but little signs of decay. Is it not possible, if we plant with a view to our work of this day's lasting to another centennial, that selections might safely be made from these fruit trees? And you, my dear sir (Lyon), and my friend Bidwell could not have failed to notice in the collection of pears exhibited by President Wilder at the meeting of the American Pomological Society in Chicago, last September,—orange pears,—from a tree 235 years old, now owned by Capt. Allen, of Salem, Massachusetts; and another plate of pears from a tree planted by Anthony Thatcher, in 1640; and still another, fruit from the celebrated Warden pear tree, which was grafted April 19th, 1775. I remember a row of cherry trees, of some dozen or more, near the city of Rochester, which I am informed by a friend, who saw them recently, are still standing vigorous and healthy, the date of whose setting reaches back nearly seventy years. Surely here are instances enough to tempt us in the direction of our fruit trees for centennial planting.

Mr. President, it may seem out of place and possibly ludicrous in me to venture upon any suggestion as to the proper manner and care necessary to success in your work of Saturday next, and especially so when I reflect that I am addressing a South Haven audience, a people noted throughout our State for their perfection in this regard. I will only remark in a general way that none of you, not even the most expert and pains-taking, can exercise too much care in the work of preparing the soil, and in digging and planting the tree, and its after management. Remember they who are the most particular and exercise the greatest care throughout, all other things being equal, will surely attain the greatest measure of success. And now that we are to engage wholly in this work on the day appointed (I take it for granted that there is no one here who will be found guilty of neglecting this duty), let us give, if possible, the entire day to the work, let it engage the attention of the entire family from old to young, let the enthusiasm be manifest in every household, and if your own allotment is finished ere the day closes, turn to the assistance of your neighbor. Yea, let every individual member who has sufficient age and strength plant their own tree, that they may look upon it through all the vicissitudes of life and call it theirs. I well remember of planting an elm sapling in my boyhood days in an eastern town and calling it my tree. I never visit that locality without going to the spot and paying it my respects. I call it my tree still, although I have no fee simple to the soil on which it stands. The last time I saw it is some eight years since, a friend drove out with me from the city of Rochester, some six miles, on purpose to note its growth. It was a fine tree with a trunk the size of my body, and its long, pendant, and sweeping branches covered an area of thirty feet in diameter. On meeting the then proprietor (who by the way was a stranger), I rather abruptly informed him that tree was mine. "That may be, sir, but it will cost you a goodly sum to get possession of it." He seemed somewhat offended at what appeared an unwarranted claim, but a little explanation and we joined hand and were friends at once. We enjoyed the hospitalities of his house and parted amid earnest solicitations to come again. Who says that is not my tree?

In conclusion let me say, that while Pomology will undoubtedly occupy the attention of your people for the time to come, or at least so long as climatic and other influences continue in your favor, let this departure,—this day's beginning in the field of Arboriculture,—be the entering wedge to open up your hearts in sympathy toward us and others located in other parts of the State not

so favorable to this special calling, if we desire to add a little Horticulture to the business of life and invoke the aid of our Pomological Society. Just a word more. Let us return to the day in anticipation for our centennial work. Crown the labors of the day with a feast becoming a day of thanksgiving and praise, that it may be remembered to the latest hour of the last surviving member of your household, and future generations shall rise up and call you blessed.

LAKE SHORE AGRICULTURAL AND POMOLOGICAL SOCIETY.

The L. S. A. and P. Society centers in and about Douglass, Allegan county, and hold monthly meetings during the entire year, and also sustains an annual exhibition. As this report is being written, a committee is preparing a report upon the question of dropping "agricultural" out of the Society name. Inasmuch as the work of the organization is almost entirely confined to fruit matters, the change would seem advisable.

OFFICERS FOR 1877.

President—D. W. Wiley. Postoffice, Douglas, Allegan county.

Vice-Presidents—N. W. Lewis, A. Hamilton, Byron Markham, Wm. Corner, Jas. F. Taylor, and A. Adams.

Secretary—W. Cumming. Postoffice, Ganges, Allegan county.

Treasurer—J. S. Owen.

Directors—J. P. Leeland and M. B. Williams.

FEBRUARY MEETING.

After the reading of the minutes the subject of pruning, which had been selected for discussion, was brought up, but before proceeding it was decided, on motion, to limit the time to one hour. The discussion was then opened by Mr. W. Corner, who disapproved of laying down rules to apply in all cases, but would have an ideal or perfect model in the mind and then prune the tree as might appear necessary in order to bring it as near as possible to that ideal. Thought spring was the proper time to prune. Was opposed to the process commonly known as heading back or shortening in, as practiced on the peach; as he thought it made the top of the tree too thick.

Mr. N. W. Lewis, who followed Mr. Corner, wished to know if the limbs of peach trees not headed back would not grow so long as to make it necessary to have the trees set farther apart.

Mr. J. Hattersley did not think trees so treated would require any more room than trees that had been shortened in, and favored the system advocated by Mr. Corner.

Mr. Levi Loomis being called upon, said he could not agree with those who opposed shortening in, but would cut off from a peach tree about one-half of each year's growth for the first three years, in order to make the limbs grow strong and stocky. Then for the next few years, if the tree was thought to be too thick, would thin out; then as it became older would again resort to heading back in order to renew the tree and furnish an abundant supply of bearing wood. He thought shortening in would help prolong the life of the tree.

Would prune peach trees when the fruit was setting, and apple trees when in blossom.

M. B. Williams said he had generally practiced heading back in his peach orchard, and was well satisfied with the result. Could not say that good results might not have been reached if that system had not been followed so closely, but as his experience and observation had been he was very much inclined to favor the shortening in of the peach, as recommended by most of the writers on the subject.

Time having expired, it was, on motion, extended one-half hour. Mr. W. Cumming thought that as there was so much difference in the habit of growth of different varieties, we should prune accordingly, and while heading back might be useful on some varieties that were naturally much inclined to spread, it might be of no use on others which were more compact in their growth.

D. W. Wiley would not cut back a tree while young except to cut off any one or more limbs which might be found growing out of proportion or faster than the rest. Did not know but it might help to renew the vigor and prolong the life of an old tree, but questioned very much whether it would be found practicable on account of the labor attending it, and was not sure but it would pay quite as well to destroy the tree and set out a new one.

MARCH MEETING.

Subject for discussion: Apples and Apple trees. Mr. Husted, of Lowell, being present, was invited to take part in the discussion. For orchard of winter apples on the lake shore he recommended the Baldwin, Rhode Island Greening, and Wagener. Farther inland would add Northern Spy, Peck's Pleasant and some other varieties. He thought the Wagener desirable on light soils. It is an early and constant bearer, flavor excellent, tree inclined to overbear, requires thinning to secure good fair fruit. Easier to thin out fruit on a prolific bearer than to force other varieties into bearing.

The Secretary spoke of the Wagener in its native county as an early and constant bearer, inclined to overbear and so produce inferior fruit.

The President said that with him the Wagener had too many inferior apples.

Mr. Husted thought good cultivation and thinning would obviate this difficulty.

Mr. Hamilton thought the Wagener desirable for this region on account of its early bearing qualities. The tree is also hardy and the fruit good.

Mr. Hamilton presented the following paper on

ORCHARDS.

An experience of about twenty years with orchards in Canada and Michigan, while traveling in the fruit-tree business, has taught me some useful lessons on the subject under consideration to-day.

Among other things I have observed that those who plant before they are ready, either on account of the condition of their lands, lack of time to cultivate, or lack of knowledge in planting, generally fail to get good orchards.

Instances also are very rare when success attends the planting of frozen trees, or what is usually termed black-hearted trees; and if such or any of our rapidly grown commercial trees have to be used, the early spring following a mild winter is the best time to transplant them. They would be almost sure to fail if removed in the spring following the winter in which they were frozen. Little if anything is saved by planting large trees. Those who plant the fewest varieties are usually best satisfied with their orchards. The Red Astrachan for

summer; Duchess of Oldenburg and Maiden's Blush for Autumn; Baldwin, Rhode Island Greening and Wagener for winter, are the most profitable varieties in this vicinity. The best system of pruning is that which renders the least pruning necessary. Those who go to the nursery for their trees usually succeed better than those who send for them. Finally, while a knowledge of the best modes of planting, pruning, and cultivating is very desirable, failures on account of a lack of such knowledge are very much less than those resulting from professional neglect and laziness.

On the best size of trees for an orchard, Mr. House gave his experience in favor of trees about two years old, both for a vigorous growth and early bearing.

N. W. Lewis gave his experience in setting an orchard with trees two years old, while a neighbor set one with trees six years old. At the expiration of seventeen years the former trees were double the size of the latter.

Mr. Husted said purchasers are of two kinds,—those who want large trees, thinking to get an early bearing orchard, and those who buy young trees to secure health and vigor. The latter are greatly on the increase.

Mr. Husted regarded March as the best time for pruning. If not done now it should be deferred until June.

Mr. Hamilton advocated early spring trimming, especially to secure a good growth of wood.

Mr. Smith said his Spy apple trees bore well at ten years from planting.

Mr. J. Goshorn preferred cultivating trees rather than mulching them, while young.

APRIL MEETING.

The subjects for discussion,—Cultivation of Small Fruits and Irrigation,—were then taken up. It was resolved to limit the time of each subject to one hour.

Secretary M. B. Williams read the following essay on

SMALL FRUITS.

In considering the subject of small fruits, we meet with the same trouble that arises in connection with almost every branch of Pomology, that is, the difficulty of arriving at conclusions even though we may perhaps have actual experience upon which to base our calculations, and this, too, is often no fault of the experience, which may be all right so far as it goes, but the trouble is it does not always go far enough. We are many times disposed to jump at a conclusion after single experiment, when perhaps a dozen in the same direction would only have been sufficient to teach us how little we know about the subject and how much we had yet to learn. There are so many and such varied circumstances such as soil, climate, location, etc., to be taken into account, that we may not unfrequently hear of the result of similar experiments conducted amid dissimilar surroundings, being nearly if not quite contrary to each other, and hence the seemingly almost unaccountable differences of opinions not only among different men but often the same man who at one time is vigorously and honestly recommending some variety or method of culture or system of pruning or something else, may, perhaps very soon afterwards, be found quite as enthusiastically condemning the same, so it would seem that whether or not it is well for the world at large to "make haste slowly" it many times is necessary for the Pomologist who would be certain of arriving at correct conclusions.

While these remarks may not be so applicable to small fruits as to the larger kinds, on account of the greater length of time required to bring many of the latter into bearing, yet let no one think that it is a short or easy task to fully decide many questions in small fruit culture. Indeed some of them can only be decided by each one for himself and for his particular locality. Take for instance the question, Which is the best strawberry? and probably the majority within the territory embraced by this Society would unhesitatingly answer Wilson's Albany; and yet how often do we hear and read accounts of varieties which are said to excel it in almost every particular. This might be easily understood if it came only from those who had plants to sell, but they frequently come from disinterested persons who, having tried them, pronounce them superior, and they undoubtedly are in some places, for while we may think that in this locality for general cultivation for market Wilson's Albany takes the lead of all other varieties, yet we would not presume to say, nor indeed can it truthfully be said of any one kind of fruit, that in all places and under all circumstances it is the best. The objection which is urged more than any other against the Wilson is its acid flavor. I remember reading a statement that it was good for everything but one, it was not good to eat. But if the person who wrote that could sometimes when hungry be fed on *ripe* Wilson strawberries, he would probably change his mind. I say ripe, because as they are often picked they are not so, but are only colored. But if left on the vines until fully ripe it would not be difficult to find those who would pronounce their sprightly acid flavor superior to the almost cloying sweetness of some of the so-called better sorts.

But as it is not my purpose to dwell much upon varieties, let us notice my method of cultivating the strawberry, which, if worthy of a name at all, might be called the hap-hazard system. The plants are set among fruit trees and the cultivation of the latter is rather the primary object, to which the former are secondary. The plants are set about $3\frac{1}{2}$ feet apart each way, which gives five rows of vines to each row of trees, and as they are kept in hills this leaves plenty of room to cultivate both ways with a horse, and hence a great saving on one very important item of expense, hand hoeing. A bed treated in this way does not so soon become run out with weeds and grass. I have had one lot in bearing four years, and judging from the last crop one might think them good for four years more, if the trees had not grown so large as to require the space, for the cultivation of which the strawberries had much more than paid. They require little more cultivation than a crop of corn. This of course does not always keep them in a fancy condition, but it usually insures plenty of berries of a size and quality not by any means always excelled by more expensive and crowded systems. The profit per acre of this plan varies of course like any other, but would not be likely to equal closer setting, hence it should only be practiced by those who have plenty of land and do not care so much about the yield per acre, as long as the result obtained from the amount of expense and labor employed is satisfactory. In setting out a plantation of strawberries I would choose a soil that is naturally a little moist, then in case of drouth about the time of ripening there might be an abundance of berries when others on soils less damp were badly dried up, and hence of course they would be scarce in market and prices would be remunerative. Strawberries generally seem to suffer more from drouth than from too much rain.

Any one growing strawberries to a considerable extent will probably find it an

advantage in at least the one respect of keeping pickers to cultivate raspberries also. It is well known that the last pickings are not so good as those that come earlier, and the pickers, who are usually paid by the quart, cannot make so much, and consequently many of them are disposed to stay at home toward the last and leave the finishing up either to be done by a few faithful ones or not done at all. It will not entirely remedy the matter to say you will not pay them unless they remain through the season, though some such rule strictly carried out will help. But they will be very likely to say they were sick or were needed at home, or they may have some other excuse which, rather than investigate, you will accept and pay them more than you really think they earned. If you do not, the matter may be misunderstood by their parents, and hard feelings may arise toward you, when you were not at all to blame. But if it is well understood that those and those only who work through the entire strawberry season will have the first chance at picking a good lot of raspberries, it will be quite an inducement for the best pickers and those who are most anxious to make money to remain. What is often said of help in other business is about as true of berry pickers, that those who desire most to make money to save or to use for some good purpose, are generally the best hands to work.

In setting raspberries and blackberries I would not choose quite so moist a soil as for strawberries, for while perhaps they are quite as liable to suffer from dry weather, yet on a damp soil they are inclined to make too large and too late a growth which will not properly mature, and if the following winter is severe these unripe canes will be killed by freezing. To prevent this, and at the same time guard against the effects of drought, I would select if possible a dry piece of ground moderately enriched and sloping gently toward the north so that the sun's rays would strike it more obliquely, and it would not become so hot and dry as ground which was level or sloping to the south, with the sun shining squarely upon it. Of course if one can lay down their raspberry and blackberry canes and cover them every winter, there will be no danger of winter-killing; but that is an extra expense which in this region, with the temperature of our winters modified by Lake Michigan, we are inclined to consider unnecessary, and berries have and can be successfully grown here without covering. Then, too, mulch, where it can be easily and cheaply obtained is undoubtedly beneficial in most cases to nearly every class of small fruit as well as to fruit trees. While thus far I have only recommended such cheap methods of cultivation as might by many be considered too careless or unsystematical, I would not be understood as condemning all other methods, but on the contrary would advise those who can to pursue more thorough and costly system provided they can do so without incurring an expense so great as to more than balance the extra results obtained, for after all it is net profit quite as much as pleasure which most of us are after in this business, and as was stated in the beginning, "circumstances alter cases," so while one with a limited amount of ground, and perhaps several children large enough to assist in cultivating and picking, might practice a more thorough system and reap large profits therefrom; another who depends entirely on hired hand labor, and had plenty of land might do better with a more rough-and-ready method where he could make horses and extra space count something.

But as I am in danger of exceeding my intended limits, I will bring this to a close, leaving the currants and gooseberries as well as the cranberries and less common classes of small fruits to be talked of by others who shall take part in

this discussion. In closing would say I have purposely left unnoticed the different varieties, and have spoken more of the cultivation of small fruits, as that of itself is a sufficient subject for a much more lengthy essay than this.

Mr. A. Hamilton favored growing strawberries in hills, and thought that in drawing the earth away from the plants one would need to exercise a great deal of caution.

Mr. W. Cumming described an implement for cultivating with a horse which he thought would kill weeds and stir the ground without throwing it up in hills so much.

The Secretary being asked about the profits of strawberries, said they varied so in different locations and in different seasons that it was almost impossible to give correct figures, but thought they would at least pay as well as other ordinary farm crops.

Mr. Wm. Corner stated that he had, in one season, from one-fourth of an acre, shipped forty bushels, which brought him \$80, besides supplying his family with all they could use from the same piece. He also related some of his experience with currants and gooseberries, and other small fruits. He favored the more general cultivation of small fruits throughout this section, believing it would prove profitable to the growers and give employment to many others, including women and children, who perhaps could in no other way so well earn something for themselves.

Mr. D. W. Wiley thought persons engaged in raising large fruits would find it an advantage to raise small fruits to furnish an income while the larger kinds were coming into bearing.

Mr. J. S. Owen thought that berries among fruit trees would not injure them, provided the soil was good, but thought the greatest objection would perhaps be the difference in time of cultivating, for while berries need some cultivation during the latter part of the season, trees, particularly the peach, could not be cultivated then on account of causing a late growth, which would be liable to winter-kill.

M. B. Williams, who had grown strawberries among peach trees considerably, thought if the berries were cultivated thoroughly as late as it would do to work among the trees, that they might be left uncultivated during the remainder of the season without material injury.

After some discussion about the best variety of black-cap raspberry, the majority seemed to favor the mammoth cluster, though some present had purchased varieties under other names which appeared to be identical with it, and whether the same or not they considered them superior kinds.

After a brief talk about blackberries the time expired, and the subject of irrigation was taken up.

Mr. A. Hamilton read an essay as follows:

I shall not occupy much of your time in relating "what I know about" irrigation, indeed I believe it is not expected that I should, for when the Society assigned to me the reading of a paper for the purpose of introducing the subject of irrigation at this meeting, they were fully aware that I had no practical experience to give, and consequently could only have expected me to present my theory, if I had any, and thus draw out the opinion, perhaps experience of our more thoughtful and practical members. To this end then, and in hope that the discussion of this subject here to-day will result in the mutual benefit of the members present, I beg leave to state that the subject of irrigation is one that has occupied my mind more or less ever since I came to this shore, and

as one drouth succeeds another, and as I observe one promising crop after another fail or utterly perish for the need of only one good shower, I became more and more convinced that irrigation, even though very expensive, which I think in very many cases need not be, would pay and pay largely.

With these convictions and a desire to discover some comparatively inexpensive system by which I could irrigate the little patch of land I cultivate, I commenced figuring and investigating a number of years ago, and have not got through yet.

The information gained by reading the experience of Robert L. Kenneson, of Utah, Perrin, of Denver, Judge Osborne, of Greeley colony, Eaton, of New Mexico, Stribling, of San Antonio Valley, and others who irrigate by flooding, with water brought forward in expensive public canals, which have to be sufficiently elevated to give the necessary head, is of but little use to us whose main ditch is the Kalamazoo river, which is a number of feet below the land we desire to irrigate. The still more expensive mode of forcing up and spreading water by steam pressure, by a system similar to the water-works seen in our cities, as practiced in some portions of England, is also quite impracticable for us. What system of irrigation would be best suited to our individual need is not so easily determined. I am of the opinion, however, that with large reservoirs constructed on our most elevated ground, irrigation would be quite practicable even with the amount of water a good ordinary well would afford and to us of very limited means.

The plan by which I had thought to irrigate my own garden and strawberry patch, is to construct, on a high sandy knoll, at the foot of which there is an abundant supply of water, a large reservoir—say 16x100 feet and 6 feet in depth, which would have a capacity of 9,600 cubic feet, or sufficient to cover about 5½ acres about one-half inch in depth, which would be equal to a good rain shower.

To construct this reservoir it would only be necessary to make an excavation in two feet in the ground, using the earth thus excavated as an embankment on every side to the highth of four feet, and plaster the whole with a cement such as we use for our common cisterns. When the knoll is sufficiently elevated the excavation should be the full depth of the pond, mine is not.

The supply of water might be furnished by a cheaply constructed wind power, such as Mr. Morrison is using in his tannery at Saugatuck, attached to a submerge pump, or in case of filter wells, to a good suction force pump. From the reservoir I would have a supply pipe leading to the ground to be irrigated, a portion of which should be portable, in order that the distributing cart might be filled whenever it became empty, and of sufficient size to load very rapidly. The common pump-log, which would cost about eight cents per foot, might be used for a supply pipe, but I had thought of using for this purpose a much cheaper, and I think better pipe, made of cement, after a plan given in the November number of the American Agriculturist for 1872, which I have here for your inspection and opinion. My distributing cart also would be made after a plan given in the American Agriculturist, two illustrated plans of which I have with me and desire the opinion of the Society as to the practicability of the same.

The advantage I claim for this plan of irrigation is, that with a large storage capacity so cheaply constructed, irrigation is practicable with a small stream such as a good well would afford, and such as an ordinary pump kept constantly running by a small wind power would furnish.

I am aware there are objections to the use of such a cart, but it has the advantage of being cheap and capable of spreading water very rapidly, and of being used on ground a portion of which might be as high or higher than the reservoir. In such case of course the lower portions of the ground would be selected as the proper place to load. When circumstances would permit, I would suggest a plan illustrated in the American Agriculturist of December, 1873, for distributing the water. It is exactly the reverse of draining, that is, the tiles are laid the same as for draining and filled from the reservoir, and allowed to soak away, and thus moisten the ground.

Mr. Corner described a plan consisting of large tanks, similar to those on railroads, with pipes running therefrom, having places where a hose and sprinkler could be attached.

Mr. Hamilton thought the tanks and pipe would be too expensive, and spreading with a hose and sprinkler would be too slow. After a short discussion of the subject by others, it was, on motion of Mr. Hamilton, decided to proceed at once to miscellaneous business.

A committee consisting of Messrs. J. S. Owen and H. H. Goodrich, was appointed to examine and report on some peach buds brought in by Mr. Corner.

Some criticisms having been heard from outside parties on the action of the Society in publishing a certain report on peach buds brought in at our last meeting, in which it was stated that fifty per cent. of one variety was killed, the President called the attention of members present to the fact. Several members gave as their opinion that there would be nothing gained by attempting to cover up facts, and the sooner it becomes generally known that we do not intentionally add to or omit from the reports of this Society anything which might mislead, the better it will be, believing as we do that the plain, unexaggerated facts concerning the advantages of this locality as a fruit region is as good a recommendation as we need or wish for. There certainly appears to be nothing alarming in the fact that a single variety from one particular orchard was reported half killed, when all other varieties were reported in a much better condition, and when also many intelligent fruit growers believe that if one-half or even three-fourths of all our peach buds were killed there would still be left as many as the tree ought to bear. It is well known that even in the most favorable seasons a portion of the buds seem to be killed.

The remaining sessions of the year were occupied with questions pertaining to the shipment of fruit, size of packages, and other matters of only local interest.

M. B. WILLIAMS, *Secretary for '76.*

INGHAM COUNTY FARMERS' CLUB.

The Farmers' Club of Mason, Ingham county, take a large interest in matters connected with the raising of fruits, and the following abstract of their work during the year is given, with supplementary papers.

OFFICERS.

The following are the officers elected for 1877:

President—A. F. Wood, Mason.

Vice Presidents—James Fuller, Vevay; P. O. address Mason. John Gear-

hart, Wheatfield; P. O. address Mason. C. C. Marsh, Alabedon; P. O. address Mason.

Recording Secretary—L. H. Ives.

Corresponding Secretary—A. M. Chapin.

Treasurer—D. C. Smith.

Board of Directors—H. Bristol, H. J. Knight, one year; G. W. Wilson, James L. Fuller, two years; W. Asa Rowe, Willis Horton, three years.

Essay Committee—L. H. Ives, Otis Fuller, W. Asa Rowe.

SECRETARY'S REPORT.

The year which has just closed—the centennial year—has been one of the most eventful in the history of our nation. The great world's exhibition, which was for so many months the center of attraction, will doubtless leave a permanent and beneficial influence on all branches of science and industry in this country, and I believe that the interests of this club will be greatly advanced by it. Many of our members returned from Philadelphia with enlarged views of things in general, and with a determination to go forward and keep pace with the age.

The centennial exhibition, and the excitement of a presidential campaign, have conspired to reduce the number of our weekly meetings during the summer and fall months. However, it seems to me, if I understand the signs, the pulsations of the club to-day indicate a healthy action of all its vital functions.

A call from the Secretary, after a few weeks interruption, has never failed to meet with a hearty response by the members of the association.

The greater portion of what has been accomplished during the year was done during the winter and early spring time.

The following are the titles of some of the essays read during the year, aside from those which are appended in full:

A. M. Chapin—"Garden Seeds."

Otis Fuller—"Our Schools and our Tax-payers."

C. C. Marsh—"Care of Farm Horses."

T. H. Lyon—"Farm Stock."

Wm. M. Webb—"Preservation of Forest Trees."

Alex. Bush—"Our Public Highways."

O. M. Barnes—"Centennial Address on the Occasion of Tree Planting."

C. L. Ingersoll, State Agricultural College—"Improved Breeds of Swine."

W. A. Rowe—"Injurious Insects."

W. S. Branch—"Dislike of Farming."

L. H. Ives—"Distribution of Seeds," etc.

A. M. Chapin—"Insurance."

Among the temporal improvements made during the year, I notice the large black-board, the material of which was presented by Mr. Wm. Webb, of Aurelius. Samples of the various woods found in this vicinity, collected and presented by members of the club, beside a small collection of rare specimens presented by N. A. Dunning. Several volumes have been added to the library, mostly public documents. A liberal distribution of seeds was made last spring, from which, as yet, no reports have been received. I trust this matter will receive the attention due at an early day. All persons receiving seeds through the Club from the department of agriculture should report the result of the experiment. If a failure, from what cause. If a success, kinds of soil, manner of cultivation, etc., or any fact tending to throw light on the matter by

which others may profit. Several pictures, charts, and maps have been placed on the walls of the Club room, which are both useful and ornamental.

The Club is indebted to Mr. R. G. Baird, Secretary of the State Board of Agriculture, for a supply of the Reports for 1875, for the use of the Club. Also to J. P. Thompson, Secretary State Pomological Society, for several copies of the doings of that Society for 1875. These reports are both replete with good practical information. Every farmer should read and re-read them to profit.

The poultry exhibition given under the auspices of the Club in January brought together the finest collection of poultry ever shown in Central Michigan. The attendance of visitors was not creditable to the public, though the display of high-bred poultry certainly reflected great credit on their fortunate possessors. I would suggest that this feature of the Club be maintained, as I believe it has already proved a source of revenue to all who have endeavored to profit by it.

A plowing match was held in June last, which was voted a complete success. The attendance was large, and competition close in all classes. For full particulars, see report of Secretary.

In addition to essays and exhibitions named, discussions of wide range have been held at various times, which must result in good to those who participated in or listened to them.

The association has paid for the use of this room, the past year \$30. This amount was paid promptly from membership dues, the only regular source of revenue enjoyed by the Club.

The annual membership fees were fixed at \$1. This, by economical and judicious management, has proved ample to meet all necessary expenses.

In conclusion, let me say that our prospects were never better than now for doing regular and prosperous work in the Club, and it is my conviction that the year '77 will be quite prolific in good results.

L. H. IVES, *Secretary*.

CULTURE OF SMALL FRUITS.

READ BEFORE THE CLUB BY A. M. CHAPIN.

BROTHER FARMERS:—You have asked me to write an essay on the cultivation of the small fruits. Now I'm puzzled, that is to say, I don't know what to say. My object in writing this essay is for the double purpose of telling you how to grow small fruits, and inducing you to grow them. If you do not love small fruits yourself, I ask you to grow them for the love that you bear wife and little ones, if you are so fortunate as to be thus favored.

I know that the cultivation of small fruits is considered by most farmers as one of the fine arts, beyond their skill, or a small matter, beneath their notice—no money in it. That there are pleasant associations connected with the eating of a dish of strawberries smothered with sweetened cream, and all from your own garden, sugar orchard, and dairy, no one will deny. There is independence in it; there is health in it, and I think that there is money in it, more ways than one.

The farmer's motto should be to live; not merely to eat and drink, to sustain life, and delve, to lay up money, but to live as God has made him; live a man, "live while he lives."

"Live while you live, the epicure would say,
 And seize the pleasures of the present day.
 Live while you live, the sacred preacher cries,
 And give to God each moment as it flies.
 Live while you live,
 All nature cries, live while you live."

God has placed within our reach, not only what is necessary to sustain life, but such as will make it pleasant and enjoyable. Among those things not really necessary to sustain life, but which will add to its enjoyments, are the small fruits.

And, notwithstanding what others may say or think, I will try to show you that it is no more trouble to grow them than onions, cabbage, corn, or potatoes. Some one may say, I do not relish small fruit. If you do not, you have no right to be selfish. There may be one or more of your household who do. And shall we do nothing to please them, and make their days more pleasant as they are passing along life's highway? If you have any regard for their health or comfort, or your pocket, don't compel them to tramp through your own or your neighbor's fields, bedrabbled in the morning dew, to hunt the scattering wild berries, when better ones can be raised in your own garden, in the place of those weeds, and where they can be picked at leisure.

Of the small fruits the most important and easiest of cultivation are the currant, the strawberry, the red and black raspberry, the blackberry, the gooseberry, the cranberry, and the grape.

If we except the currant, it is not many years since their cultivation as a crop, or even as a family luxury among farmers, was thought of. Many of us doubtless have vivid recollections of tramping meadows for the strawberry, creeping through the brambles for raspberries and blackberries, at the expense of hands and clothes, of climbing grape trees, as we called them, at the imminent peril of our limbs if not our necks; of traversing marshes, and running the gauntlet among massasaugas, to pick the cranberries.

But since plaster has come into more general use, wild strawberries have vanished. Since sheep husbandry has become so general among us, the brambles or briars have gone mostly. With the introduction of better varieties, the wild grapes seem sour and undesirable.

Don't think because you have a good "berry patch" set out that you are all right, nothing more to do in that line, your troubles at an end. I tell you nay! unless you hoe, your hopes will perish as the weeds grow. Neither let us think that because our more thoughtful neighbor has a good patch of berries, that we and our children have only to go and eat them and say "thank you." It is astonishing, as friend Purdy of the Fruit Recorder said, "how fond they are of such things, when in a neighbor's garden."

And we might say of our thoughtlessness or indifference to the little wants of the little ones in this matter, "that the inhumanity of man to man (children), makes countless thousands mourn."

Many of us, heads of families, seem to feel or act, if we are not as bold to say it was Louis the XIV., when he asserted that he "knew perfectly well what the state wanted, since he himself was the state."

I have given you a few of the reasons why you ought to raise small fruits, now let me endeavor to tell you how to raise them. I will give no fancy plan, but a plain common-sense way of doing it.

And let me begin with that king of the small fruits, the currant. There are

many species. I will name but two, the red and the black. Of the red, there are many varieties, the red and the white Dutch, the cherry, white grape, and La Versailles, etc. Of these, the red and white Dutch are the ones in common cultivation in our gardens, and are doubtless the currant for the million, bearing almost any kind of slip-shod cultivation, as you see them in nearly every garden. To grow them in perfection, they should be set in rows six feet apart, and three feet apart in the rows, kept well trimmed or thinned out, cultivated and manured. If kept well mulched with straw it will save much labor.

The black garden, or English currant, is of a different species. It is larger and has a strong aromatic smell and flavor, and is much esteemed by some persons. It is not so general a favorite as the red species.

Cultivation.—Same as the red.

Strawberries.—There is perhaps no other fruit that grows so universally over every part of the world, as the strawberry—in the snowy north or in the sunny south, in the valley as well as on the hill side. It is a favorite with all races of mankind, and under favorable circumstances it is very prolific. From one to two hundred bushels may be grown from an acre in one season.

Cultivation.—Plants should be set in rich moist loam, in the fall or spring. Very early spring is the best time. Set in rows four feet apart and eighteen inches in the rows. Clean cultivation is necessary to success. They should be covered out of sight in winter with marsh hay or straw, clear of hay seed. This should be put on when the ground is frozen hard enough to be driven over without injury to the plants, and should be raked from the crowns of the plants in the spring, and left on the ground among the plants until the fruit has been gathered, when it should be removed unless sufficiently rotted to allow the cultivator to pass through it. Modifications of this manner of culture can be introduced as persons become acquainted with the cultivation. Downer's Prolific for early, and Wilson's Albany for main crop, are perhaps as good as any. Recollect one thing, the better the culture, the better the crop. The old adage "a stitch in time, etc.," comes in right here.

Next in order for this simplicity of cultivation, is the raspberry. There are but two species usually cultivated for their fruit, the red and the black. There are several varieties of each. Of the red, or those mostly propagated from sprouts, the Kirtland, Franconia, Philadelphia, and Clark, are hardy, and perhaps as good as any for the million.

Cultivation.—Set in rows eight feet apart and three feet apart in the rows. Till as you would corn one way. Let the sprouts grow in the rows, and treat them as weeds between the rows. Let the rows spread to about two feet in width. Cut out the dead canes after gathering the berries, as well as all weakly sprouts. This is all the culture needed from year to year, except the application of a little manure from time to time. Keep the sheep and cattle out of them, and you can reckon on a good crop every season—no every other year about it—say fifty bushels per acre, or at that rate.

The black cap species are propagated from layering the tips. There are also many varieties of these—black, orange and purple colored berries. The Doolittle, Mammoth Cluster, Seneca, Davison's Thornless, and Golden Cap, are all hardy and reliable kinds.

Cultivation.—These as well as the red should be set in the early spring, in rows eight feet apart and three feet apart in the rows, and kept clear from weeds as you would corn. To pinch off the tips of the canes when three or four feet in height is an improvement. Cut out the dead canes each year after the

berries are harvested. Throw if you will, a shovel of well rotted compost about each hill every fall, and you will be repaid many fold for your labor.

There are several species also, of the blackberry. I know of but one, that is called the high blackberry, which is worthy of cultivation, of which there are many varieties. The Kittatinny, the Wilson, the Dorchester, and Lawton, are hardy, and perhaps as good as any for this locality. They should be set in rows eight feet apart, and three feet apart in the rows, allowing them to fill in the rows about two feet in width, treating all between these as weeds. Cultivate and keep clean the first season, and seed among them with white clover after. They should not get too rank and succulent in growth. Pinch off the tips when three or four feet high. This is an excellent fruit, but not as sure a crop for every season as the raspberry.

Of grapes, the number of cultivated varieties is legion, and many are deterred from raising them partly on account of the difficulty of selecting a good and hardy variety from the many offered for sale, and from the great diversity in modes of cultivation, either of which modes will do, but not all of them on one poor defenseless vine. Not too many doctors, my friend, lest the patient be injured. Any soil that is good for corn will do for the grape. Do not let peddlers impose upon you by their jars of magnified fruit, prefaced by the recitation of their piece so well learned, and so well said. Procure plants of some reliable nurseryman. I would recommend the Concord for the million. It is as hardy as the wild grape of our forests, and palatable enough for a king. It may be grown on a stake, a trellis, an arbor, the house side, the tree, and the fence. I have raised very good ones on the ground after the manner of pumpkins. Understand I do not recommend this slip-shod plan. If you wish good crops of good grapes, you must care for them the same as for every other crop you would raise. The stake plan is as simple and perhaps as good as any. Set your plants six feet apart each way, drive two stakes for, and near each plant, train a vine upon each stake, the one for fruit and the other for renewal, cutting back the old or fruiting vine in the late fall, and retaining the renewal for the next year's fruiting; which should be cut back to match the height of stake in the fall or before the sap starts in the spring. Pinch off the tips of the new growth, and pick off fruit so as to keep a balance between top and roots.

The cranberry, although classed among the small fruits that are cultivated, is not within the province of the ordinary farmer. It requires a peculiar soil for its cultivation, a wet bog, covered with bank sand or gravel, and so situated that it can be flowed with water at the pleasure of the cultivator. Many kinds of upland or dry land cranberries have been advertised for sale, but so far I believe none have been grown successfully.

Now in a few words let me recapitulate. I do this because I am anxious that every farmer should, as I am sure he could, raise small fruits for family use. If you do not know about it, ask the children, ask the lady of the house if they are not good smothered in cream and sugar? good dried? good canned? good to eat out of hand? I take it for granted that all raise currants.

Strawberries.—Set in rows four feet apart and eighteen inches in the row. Let them run together in the rows forming a matted row, but not between the rows.

Red Raspberries.—Eight feet between the rows and three feet in the rows. Let them run together in the rows, and treat as weeds between the rows.

Blackberries.—The same as red raspberries, and pinch off the tips when three or four feet high, and seed with white clover after second year.

Black Cap Raspberries.—Set in rows eight feet apart, and three feet in the rows. Pinch back when three feet high.

Grapes.—Put a vine or two of the Concord in some place, if you leave it to climb a tree or an out-building. Give it the sunny side, and feed it well with old boots and shoes, broken bones, old woolen rags; and it will also be a better place for dirty tags, than in the fleece for market.

Cranberries.—Generally, do not meddle with them.

The cultivation of small fruit as a market crop is worthy of a passing notice in this connection. Perhaps I could not do better than to give some statistics.

In the vicinity of Moorestown, New Jersey, it was estimated that 12,000 bushels of strawberries were raised in 1862, which netted the producers \$40,000. 210 bushels were raised on one acre, but the average yield in the vicinity was 55 bushels per acre, or a return of \$176 per acre net.

In 1864, three towns in Burlington county, New Jersey, raised 12,596 bushels of strawberries, and received for them \$45,345. Average yield per acre 55 bushels.

In 1865, four towns in same county, raised 27,924 bushels of strawberries, and received for them \$164,633. Average product per acre was 58½ bushels. In the same vicinity in 1865, there were raised 1,600 bushels of raspberries, mostly of the red varieties, which sold for \$15,360; and of blackberries, 9,189 bushels, which sold for \$44,107.

A bright faced boy put a lighted match to the kindling-wood in the grate, and was watching the flame as it forced its way among the crackling coals, when half in thought and half aloud, he said: "Who would have thought a little match would make so big a fire." Hoping by what I have said, a small fire may be kindled, or a little leaven may be introduced, that will some day lighten, or brighten, or cheer the pathway of many, I bring this essay to *finis*.

INJURIOUS INSECTS OF THE GARDEN.

AN ESSAY READ BY W. A. ROWE BEFORE THE FARMER'S CLUB.

To you gentlemen who are lovers of the garden, I need make no remarks as a preface to this brief description of a few of its enemies.

Numerous are the beings of the insect world which dwell in our gardens, but only a few of those most troublesome to our vegetables and small fruits can be touched upon this afternoon.

First, we will notice briefly some of those which feed on that good old fruit, the currant. Of these there are three which are frequently quite troublesome in this State. They feed upon both currant and gooseberry. The young of two of them are commonly called currant slugs. Of these one is the larva of the American currant saw fly. It is to be found on our currant bushes almost every year, though more abundant some seasons than at others.

The slug is of a grass green color with a black head which, however, becomes green after the last moult. They appear in June, and also a second brood in August. They moult five or six times and then descend into the rubbish at the base of the bushes to undergo their change into the perfect state. They are then about the size of the common house fly, and are black with yellowish head and legs. They have four wings instead of the two which mark the true flies. The eggs are laid anywhere on the bushes.

The other currant slug is the young of the foreign currant saw fly, and is

much more destructive than its American ally. In size it is about the same as the preceding, but in color it differs, being yellow with a black head. The larva of this saw fly is green covered with black dots until the last moult. It then becomes entirely green, and is about half an inch long. They destroy the leaves by eating them full of small, round holes. The eggs are laid on the under side of the leaves. The larva spins its cocoon in the rubbish at the base of the bushes and there changes to its perfect form.

The best remedies for both of these slugs are the same, viz. : sprinkling them with petroleum or with a solution of whale oil soap, or with white hellebore, either powdered or in solution. All of these will be apt to injure the fruit. In case of the foreigner we may many times discover and destroy the leaves with eggs on them.

The currant worm is the young of a yellowish moth whose wings are spotted with black. There are also rows of black spots on the body. The worm is covered with black dots and is about an inch long when fully grown. It has but ten feet, and is one of the so called "measuring worms." It goes just beneath the surface of the soil to pupate. The eggs are laid on the twigs of the bushes in the fall, and remain there until just as the leaves are coming out in the spring, when they hatch and commence eating. As the clusters of eggs are white we may destroy them in the winter season. If this is not done the worms may be shaken off and killed or destroyed by sprinkling with petroleum, white hellebore, or a solution of whale oil soap.

Leaving those insects which feed upon the currant, let us next notice a few of those which feed upon the cabbage and allied plants. First of these are the cabbage worms, of which we have three kinds in this county, but all are much alike and are destroyed in the same way. None of them are confined to the cabbage, but feed also on the turnips, ruta бага, cauliflower, and many other similar plants.

Those pretty white butterflies which we so often see flying about in our fields in spring and summer are the parents of one of these worms. The larva of this white butterfly is about an inch and a half long when fully grown. It suspends itself by the tail on the under side of old sticks and boards when about to change to the perfect form. The eggs are usually laid on the under side of the leaves.

We have two broods of them, the first appearing in the latter part of May or early in June and the second in August or later.

The spotted cabbage butterfly differs from the preceding chiefly in having several large irregular black spots on the wings. Its larva is green spotted with black. Both of these are quite abundant here and may be seen every season.

The parent of the third one of these cabbage worms is the foreign cabbage butterfly. The female of this species has two round black spots on each wing. The larva is green, and is very destructive. It is rather curious but very vexing to us to see how much more voracious and destructive these foreign insects are here than in their native country.

A very good way to lessen the numbers of these cabbage worms is to place boards about an inch above the ground among the cabbage plants. They will attach themselves to the under side of these to undergo their transformation and may then be easily destroyed. Catching the few butterflies in spring when they first appear will go a great way in protecting the plants.

Our cabbage and tomatoes are badly injured many years by being eaten off just above the surface of the ground. This is the work of the well known cut-

worm. There are several species of these cut-worms, but all of them are much alike. They feed upon various substances, such as corn, grass, cabbages, and tomatoes, but are usually most abundant on grass land, and greatly injure the corn crop when planted on sod,

The parents of these cut worms are pale, grayish moths, which are often seen about our lamps in the summer time. Their wings expand about one inch and a half.

The eggs are laid in the ground beneath the plants which are to form the food of the insect. They soon hatch and then the cut worms come to the surface of the ground during the night and dark, cloudy days to eat. Some of these cut worms are of a cream color, while others are a dull black. When fully grown they form an earthen cocoon, whence the perfect insect comes out in June. In our gardens we may kill these by digging them up or by cleaning the garden of all rubbish and laying down several handfuls of grass, under which they will hide in the day time and may then be killed. Sprinkling the ground around the plants with a mixture of salt, ashes and plaster is also recommended by some. When transplanting the plants we may wrap a piece of sized paper about the stem and this will protect the plant. The paper should extend down below the surface of the ground.

Those of you who are blessed with nervous wives or daughters, have no doubt some time in your life been quite startled by a shriek coming from them when they were out picking tomatoes; hastening there to learn the trouble, you found that it was caused by those "horrid tomato worms," whose harmless caudal horn, was, in their estimation, capable of inflicting a death sting on any person who dared to touch them.

These tomato worms are the young of those large humming bird moths which we may see flying about our flower beds about dusk in July and August. This moth has a very long sucking tube with which it sucks the sweets of flowers. Its tapering abdomen has five light colored spots on each side. The moth is grey. The larva is usually green, though sometimes brown or black, and on each side are oblique whitish stripes. They grow to nearly three inches in length, and then enter the ground in the fall, remain there all winter, and come forth as moths the next summer to lay eggs on the vines, which soon hatch and begin another round of destruction. Hand-picking is about the only way to get rid of these, though turkeys will sometimes eat them.

The last insects of which I have time to speak to-day, are the cucumber beetle, and the squash bug, both of which feed upon cucumbers, squashes, melons, etc.

The cucumber beetle is one of a large class that live upon the leaves of various plants, and which are commonly called leaf beetles. The potato beetle, the grape leaf beetle, the asparagus beetle, and many others belong to the same class. The eggs of the cucumber beetle are laid upon the leaves where they hatch in a few days. The grubs then eat the bark and bore into the stem of the plant just below the surface of the earth, and sometimes even above ground.

The grub is white with a brown head, and when ready to pupate it is about half an inch long. It is in the earth about two weeks undergoing its transformations and then comes forth as the striped cucumber beetle to live upon the leaves of its own food plants. In the fall, however, the larva forms an earthen cocoon in which it remains all winter, and appears in the beetle form in the spring.

The squash bug lives over winter in old rubbish, and is on hand ready to de-

posit its clusters of yellowish eggs on the under side of the leaves of the cucumber and allied plants as soon as they appear. The greyish larva, as soon as it hatches, inserts its beak into the stem of the plant, sucks up the juice and kills the vine. We may pick and destroy the leaves containing these eggs. If we will protect the plants, by means of a box covered with thin muslin, until they get a vigorous start they will not usually be much injured either by squash bugs or cucumber beetles. In case of the beetles, sprinkling with lime, plaster or plaster mixed with paris green, will to a considerable extent, protect the vines.

With these few brief and incomplete descriptions, I will close this essay, hoping that each of you will study these insects, when working in his garden, so when we talk over this subject again at some future time, a better history of them may be given.

GRAFTING AND PRUNING.

AN ESSAY READ BEFORE THE INGHAM COUNTY FARMERS' CLUB BY J. L. FULLER.

Mr. Chairman, and Gentlemen of the Club:

I do not intend to-day to present any lengthy article on the subject of grafting and pruning, believing that something short and condensed will be more likely to meet your favor.

It seems that the ancients became aware at a very early date, of the practicability of growing different kinds of fruit on one root. The Roman writer, Varro, mentioned upwards of twenty different modifications of grafting, and Thouin, of Paris, a fruit experimenter of considerable note, described over one hundred ways of changing the varieties.

The process of top grafting is very simple, and it is astonishing that so many of our farmers know almost nothing about it. Out of the many modes that are given, only a few are of practical value.

We will first speak of cleft grafting, by which many old orchards that are almost worthless, may be very valuable. In sawing the top, care must be used, or it will not be well balanced. In this windy country the strength of the tree is an important consideration. The center of the tree should be kept open if possible without sacrificing too many large limbs; but if the tree is of much size and has a main perpendicular stem, always allow it to remain, as it contains the heart and has much to do with keeping up a healthy circulation of sap. Novices in this business of changing the tops, are very apt to get them too dense. They want to go out on the limbs, seldom cutting stocks larger than two and one-half inches in diameter. However, if it is necessary to cut very large limbs, insert four scions, allowing only two to grow after a year or two. The next business after the top is sawed is to sharpen the scions. Take the previous year's growth of the variety you wish to insert, and sharpen in the form of a wedge, leaving the outside a little thicker; then check the center of the stub with a knife, inserting a wedge to hold the halves of the stub apart while you place the graft so its outside bark will cross the bark of the stub. This gives the scions a little pitch outward, allowing the buds, which should be two or three in number, to grow without interfering with each other. The end and splits on the sides of the stub should then be tightly covered with a firm wax made of resin, beeswax, tallow and linseed oil. In a moderate sized limb, if both scions grow, it will make a firmer and better union to cut one away. I

have seen grafts unite so nicely with the stock, that, within eight or ten years afterwards it was impossible to tell where the splice was made.

Bark grafting is thought by many, to be preferable for large limbs, as it obviates, in a measure, the difficulty of joint decaying. Others object, on the ground of the strength not being sufficient, where there is a rapid growth for the first two or three years. Frequently scions may be made to grow quite thrifty in old tough trees by this last process, when it would be almost impossible to split the limbs and have the grafts do well.

Whip grafting is mainly used by nurserymen where the scion and stock or root are nearly the same size—a very perfect way of making the union when nicely done.

Another modification practiced to some extent by dealers in small fruit trees and shrubs is "saddle grafting." This was practiced extensively by the ancients, but is gradually giving place to the whip or tongue process.

Farmers can increase any kind of favorite peach or cherry trees that they have, with very little trouble. Drop some pits in an exposed place, covering lightly with dirt. In two or three years, or as soon as the tree is of sufficient size, make an incision lengthwise of the bark, two or three inches in length, with a short cross cut at the top. Shave off a bud of the present year's growth, leaving on some bark with a little wood directly underneath the bud. The edges of the bark at the incision, are then raised a little, and the bud pushed downward under the bark. A bandage is then wrapped around, covering all parts but the bud. Budding may be done any time during the summer, after the buds are properly matured.

Trees that have been entirely girdled by mice or other animals, may be preserved by taking some twigs from the tree, inserting one end in the bark above the injured portion, the other below. This allows the sap to circulate from the root to the top. Of course the more of these connections there are, the sooner the girdled portion will be healed.

Trees having several branches from the main stem, nearly the same distance from the ground, when heavily loaded with fruit, are quite apt to split or check down the trunk. The difficulty can be obviated by taking a slip cut from the tree, inserting one end into the bark of the weak limb, the other into the bark of the main stem, or some other strong branch; or, by grafting the end of a small limb growing on the weak one into some larger one on the opposite side of the tree.

Apple and pear trees can be grafted from the time wax will work until the blossoms drop, which takes place in this State, generally, about the last of May or first of June. It is thought by many experienced grafters that from the first until the middle of May is as suitable a time as apple scions can be set.

Cherry grafting is much more difficult and should be done very early, if possible while frost still remains in the ground, and before the buds begin to swell.

The cultivated varieties of cherries consist of two distinct classes. The mazzards, hearts, and common black cherry belong to the first class, and are characterized by their tall, rapid upright growth. The second class includes the Dukes, Morello, and common red sort. These are more hardy in this section, but not as large or fine flavored as some of the first named varieties. The common black cherry is preferable as stock for budding or grafting; in fact, the large, sweet kinds are usually a failure on the sour or red stock as the nature of two varieties is so unlike.

We find a universal law in plant as well as in animal life, that species which

are most allied, will amalgamate most naturally with each other. Varieties of the same species unite most freely, then species of the same genus, then genera of the same natural order; beyond this, amalgamation is very rare.

Pear grafted upon pear retains its original shape of tree and fruit, but the flavor and keeping qualities are somewhat influenced by the root: while putting pear upon quince diminishes very materially the size of the tree, without changing to any extent, the size or quality of the fruit. Pears will grow for a few years on apple or thorn roots, but are short lived, because their natures are so unlike.

A successful orchardist must possess some knowledge of the nature of the varieties he wishes to propagate. A Canada Red is improved in size of fruit and strength of tree, by grafting on a Northern Spy stock, while the Spy is a failure on a Sweet Bough. A strong growing stock has considerable influence upon light growing grafts. A Spitzenburg grown upon a Pumpkin Sweet, in many instances, entirely loses its identity. A very tart variety is somewhat modified in flavor by growing upon a sweet stock, and *vice versa*.

Since there is a great diversity of opinion in regard to pruning, I will offer only a few suggestions on this most important subject. Many intelligent persons to this day object to pruning trees to much extent, claiming that Nature should be allowed to take her own course, unmolested by the hand of man; while others are ardent advocates of frequent and very heavy pruning of certain varieties. Believing that success is more frequently attained, in the majority of cases, by taking medium ground, I will recommend only a limited amount of trimming.

Apple trees should form their heads about five or six feet from the ground; if much lower than this, the under branches will be in the way of cultivating the ground; if much higher, the trunk will be unnecessarily exposed to extreme cold and heavy winds. Great care should be taken in forming the heads of young trees, as a few moments of time with a sharp knife, will accomplish what it is impossible to do years later, by hours of hard labor with the saw, ax, and chisel. The beauty of a tree depends largely upon the care it receives in its infancy. If trees have a dense top and do not produce fruit abundantly, prune heavily in the spring or late in the winter; but should their fault be overbearing, trim lightly in June.

Cherry trees need but little pruning, except to form their heads: while peach trees frequently produce a better quality and a greater amount of fruit, by cutting away a large portion of the previous year's growth.

The tendency of the pear stock is largely upward, consequently the pruner's intention should be to keep the top open and well spread.

In conclusion, let me urge the necessity for an intelligent application of the principles of pruning and grafting, by which unsightly, worthless orchards may be converted into beautiful ornaments for our homes, producing fruits that may rival the famous "golden apples of the Hesperides."

UNION FARMERS' CLUB, ROMEO, MICHIGAN.

LIST OF OFFICERS.

President—George W. Phillips.

Vice Presidents—Uriel Day, Thomas McIlwrick, James Stephen.

Secretary—John E. Day.

Treasurer—John Wilson.

Librarian—N. G. Reed.

Annual meeting occurs on the first Thursday in January. A plowing match is held each year.

APPLES AND APPLE TREES IN MACOMB COUNTY.

J. E. Day, Secretary of the Union Farmers' Club, Romeo, Michigan, writes :

One of the most pressing questions of the orchardists of the older settled portions of our county is this: "What shall I do with the old orchard?" Many trees have failed, or are year by year showing sure tokens of decline. Most trees set out fifty years ago were allowed to grow as seedlings until the fruit showed by its quality whether it should always remain a seedling or be top-grafted. In the process of grafting large limbs were removed to receive the scions, and as these advanced in growth other larger ones were sawed out, until the entire top was removed, often in a single season; in other instances high winds and careless pickers, together with severe winters and undrained soil, have brought about a series of evils, which seem to culminate about these times. Loss of vitality and consequent decay of the timber in some portions of the trunk, numerous dead limbs and a general scraggy appearance, both in the tree and its fruits, are the results of such decay. Large branches sawed out to receive scions or to make room for their growth, never perfectly healed, and the disease thus induced was carried down to the intersection of the branch with the trunk, rotting in the crotch and in the end producing the loss of the limb and the injury of the tree. Perhaps this state of things might have been prevented by a more judicious management in the early years of the orchard; but the question now is, "will these trees renovate themselves? or will any treatment we can give them in the present or future produce such a devoutly-to-be-desired consummation?" Undoubtedly many older sections have settled the question by actual test, and are ready to answer promptly and correctly: with us the problem is to be worked out. In many instances, where the body of the tree is sound and healthy and the fruit of a standard variety, the trial might be made of gradually removing such branches as show signs of failure, and allowing young and vigorous shoots to take their places. This should be done slowly and with great care until an entire new top takes the place of the old one. I know it is held by many that nature will work her own remedy, and as the decayed branches drop out, new ones will take their places, and the orchardist will better be able by-and-by to judge which one to remove. The objections to this are serious. The top is always full of suckers and dying branches intermingled, presenting an unsightly appearance, and rendering the gathering of the fruit entirely a dread and almost an impossibility. But so far as my observation goes, these old trees are mostly decayed in the trunk, and are of second or third rate fruit. Such trees, or such orchards, should be removed as soon as young ones can be raised up to take their places. I would

care for the old orchard by manuring and by pruning and other means, as long as such work seemed to pay, and at the same time plant and cultivate its successor. Shall we plant new trees in the places from which old ones have been removed? Unless some precautions are taken to provide the soil with those elements drawn out by the roots of the old trees this will seldom be productive of satisfactory results. By the careful removal of the stump and the roots of the old tree, and by the use of manures with lime and ashes, the ground might be fitted to receive the young tree; but I should much rather select a new plat of land and rear a new orchard apart from the old one, and this I would do in season to prevent a break between the failure of the old and the bearing of the new one, and, as I have before stated, in cases when the fruit is of desirable varieties, I would use every means to keep it in healthy and bearing condition.

Now as to varieties. The past ten years have wrought somewhat of a change in the list of favorites, and have proved that many kinds in an ordinary orchard are not desirable; also that nearly all our orchards are sprinkled too freely with summer and fall varieties. Some kinds once thought to be number one, as respects hardiness, keeping and quality have been forced down in the scale, while others have risen in esteem. It is not advisable for the farmer to try many experiments with new varieties. A few tried and proved ones will give far more satisfactory results both as regards home use and marketing. The Astrachan, the Tart Bough, and the Yellow Harvest, are thrifty growers and good bearers, and the quality of each is excellent. Add to these the Sweet Bough and the Golden Sweet and you have a good selection of summer apples. For a selection of fall apples take the Fall Pippin, the Maiden's Blush, the Fameuse, and the Jersey Sweet. For winter the Greening, the Red Canada, the Spy, the Baldwin, the English Russet, and the Tallman Sweet. These afford a choice variety for home use, and all are readily taken in the market. First and foremost for all uses at home and abroad, in the hand or in the pie, as a bearer and a keeper stands the Rhode Island Greening—not perfect, perhaps, yet as near it as any one variety has yet attained. In old trees it is apt to be a little scraggy and rough, and in cellars warm and dry the skin mildews and turns black, rendering the fruit unfit for market. The Red Canada has proved our best market apple, as perfect in form and color as the fruit of Eden. As an eating apple it suits the taste of most persons, while as a cooking apple it is inferior to many others. The trees are of slender growth, and are easily affected by severe winters. The experiment is being tried of grafting this variety upon stocks of more vigorous varieties, such as the Astrachan or the Spy, which may prove of great advantage. Let the stocks of the Red Astrachan or Spy attain the height of five or six feet in the place where they are to remain, and then bud into three or four of the larger branches.

The Northern Spy has risen in credit during the past two or three years, and by many is placed at the head of the winter list. The trees are enormously productive of timber, and can never be trimmed amiss or hardly ever too much. They are slow in coming into bearing, and often one branch will be overburdened with fruit while the remainder of the tree is barren. The fruit is very uneven in size and unlike in form and color. The skin is extremely tender, and finger marks and bruises show with remarkable effect. Yet it is a good market apple and also choice for domestic use. The fruit is extremely showy and often of enormous size. Ninety apples pressed in have been known to fill an apple barrel.

The English—or as it is often called,—the Golden Russet, is noted chiefly

for its keeping qualities. It is a free grower, a good bearer, and a fair apple for domestic uses. It always finds a ready market, and but for its size, which is small, would be a very desirable variety. It is apt to wilt in the cellar unless excluded from the air and kept in a cold, moist corner. The Baldwin, once a great favorite, has gone into disrepute on account of the large proportion of wormy and imperfect specimens thrown out in packing for the market. The packers cull them more freely than any other variety. Yet being a good bearer and always finding a free market, it will find a welcome place in every orchard and in every home circle.

The Talman Sweet is the only winter sweet apple which has proved worthy of cultivation. It is very sweet and very dry, excellent as a baking apple, and thus fills a place that would otherwise remain unsupplied. It is a fair bearer and an excellent keeper.

Now, I know many will feel hurt because some favorite has been left out of this list. All have the liberty to admire and produce those varieties which please them best. I have only mentioned those of tried and proved excellence, and which will never disappoint the grower or the buyer.

The Wagener is fast coming into popularity, but has not as yet been sufficiently tested in this county. I know it to be an enormous bearer and a choice apple.

The King, or King of Tompkins County, is not up to its recommendation. It has proved to be a hard and coarse-grained apple, largely water-core, and apparently not worthy of cultivation. A large proportion of the trees set in this locality are dead, or dying as the effect of the extreme cold winter of three years ago. What shall we say of the Seek-no-further, the Spitzenberg, the Rambo, and many others, all favorites, and all worthy of cultivation?

Any one who wishes may cut out of my list one or more, and supply these, and my feelings will not be hurt. Care should be exercised in preparing for market. If sold in the orchard the responsibility rests upon the packers, but under any circumstance the reputation of the orchard should be held a matter of great importance. The reputation of many an orchard is injured by ignorance in naming varieties. All red apples are called "Steele's Red," and all green apples are called "Greenings." The apples from each orchard should be rightly named before leaving the orchard, and the owner should see that Baldwins, Seek-no-furthers, Spitzenbergs, Kings and other red apples do not go indiscriminately as Red Canada or Steele's Red.

The fruit to be preserved for home consumption should be perfect, carefully picked and headed up, and kept as near the freezing point as possible. It has been proved here that a cold, moist atmosphere keeps the fruit in much better condition than a dry and warmer one. Apples should not be regarded as a luxury to be indulged in only occasionally, and that during a small portion of the year; but as a part of the daily food of ourselves and our families. The Americans are a bilious people, and if fruit ripe and well preserved extends more largely into our bill of fare, such might cease to be the case.

Our first care then should be to keep our orchards in the best condition; select a few of the choicest varieties, pick carefully, and keep sound, and make them an article of diet 365 days each and every year.

Now, I am aware I have said nothing new, and my only excuse for saying anything, is that the truth, even if old, needs an occasional review.

THE DISPLAYS OF MICHIGAN FRUIT AT THE CENTENNIAL.

BY HENRY S. CLUB.

There were three displays of Michigan fruit at the Centennial Exposition, held in Philadelphia in 1876, viz.: I. The display of winter Apples grown in 1875, which took place in May, 1876. II. The display of summer fruit in September, 1876; and III. The display of fall and winter fruit in October and November, 1876.

I. DISPLAY OF APPLES OF 1875.

No better opportunity could be furnished to the States to show the keeping qualities of their Apples than a display in the month of May; because Apples grown the previous year must have kept well to even maintain their form and color until May, and to really make a presentable display of Apples fully six months after harvest, and 1,000 miles from the State, is an achievement worthy a description and permanent history. The names of those growers who contributed to this display should be prominently placed on the records of the State Pomological Society, and proper credit should be given to those individuals and localities whose products have done so much to demonstrate the high quality of Michigan Apples.

This display took place on a large table a little south of the center of agricultural hall. The table was covered with about 250 plates well filled with about forty different varieties of apples, the most conspicuous of which were as follows, placed in the order of good keeping:

Northern Spy,	Tewkesbury,	Jonathan,
R. I. Greening,	Winter Blush,	Westfield Seek-no-further,
Red Canada,	Detroit Red,	Gilpin,
Roxbury Russet,	Pennock,	Hollow Crown,
Baldwin,	Ben Davis,	Bellflower,
Green Newtown Pippin,	Peck's Pleasant,	Rawle's Janet,
Yellow Newtown Pippin,	Smith's Cider,	American Beauty,
Wagener,	Fallawater,	Bailey Sweet,
King of Tompkins County,	Michael Henry Pippin,	White Pippin,
Hubbardston Nonsuch,	Sweet Vandervere,	Fall Pippin,
Esopus Spitzenberg,	Minister,	Gloria Mundi.
Flushing Spitzenberg,		

In regard to this list it should be remarked that it was made up from the external appearance of the fruit. Perhaps, had the fruit been cut, the Roxbury Russet would have been placed first, and the Wagener would have changed places with the Baldwin, and some few other changes would have been made in the order of these names.

With the exception of the last three or four varieties, the fruit, when unpacked, was in an excellent state of preservation. The unpacking of so much fruit near the center of the large ten-acre hall, diffusing an aroma so delightful, and the display of so much bright, beautiful, and crisp fruit at a season when even in the well supplied markets of Philadelphia such scenes do not occur, created quite a sensation in the thronged hall, and attracted a large crowd of visitors, who eagerly inquired where this fruit came from, and put many other questions concerning it. When the display was complete, a banner was placed above it, inscribed :

MICHIGAN,—CROP OF 1875.

It is well known to fruit men that 1875 was not a very favorable year in Michigan for fruit, but, notwithstanding this fact, when the representatives of other States saw what Michigan had to show, they did not unpack their fruit and exhibit it. Not another State occupied any of the tables intended for this display. The State of Iowa displayed with their wax models of fruit in their agricultural department, several plates of real apples, but made no pretension to exhibit fruit in competition with Michigan, so that as a matter of fact, Michigan was the only State that represented at the Centennial this feature of American industry,—the production of choice apples for winter and spring consumption.

It is not contended here that no other State could have done what Michigan did on this occasion, but the fact that no other State did do it, is significant, and worthy of consideration in making up a general estimate of the comparative results of the Centennial.

There was no fruit specially preserved for this particular display, but it was collected from stock in cellars ordinarily reserved for spring sale.

The theory which seems fairly deducible from the facts just stated seems to be that the climate of Michigan, under the moderating influence of surrounding lakes of deep water, is peculiarly adapted to the production of that solid quality in the apple that is essential to long keeping. The same varieties of apples that keep so well when raised in Michigan, when raised in more southern States, away from the influence of water, are only fall apples, and are not expected to retain their value more than a few weeks after gathering. The quality is coarser and softer, and consequently not so well adapted to resist destructive influences. The apple is most at home in a moderately cool climate, and when grown under a sunshine almost tropical in its intensity, cannot maintain its solidity and enduring quality.

The organization by which this excellent display of Michigan keeping apples was made was primarily the State Pomological Society, who appointed as committee in charge of forwarding the fruit, Mr. N. Chilson, of Battle Creek. Mr.

Charles A. Ilgenfritz, who was agent of the State Agricultural and Pomological Societies, received and displayed the fruit to the best advantage.

Mr. J. Waterman and Mr. P. E. White, of Northville, Michigan, made a very fine display of Red Canada (called by them Steele's Red), and Northern Spy apples, at one end of the table, and N. Helling & Brother, Battle Creek, made a special display of apples preserved in their fruit house at a low temperature. The varieties exhibited by them, and which were in excellent preservation, were:

Spitzenberg,	Ben Davis,	Vandervere,
Bellflower,	Baldwin,	Jonathan,
Westfield Seek-no-further,	Roxbury Russet,	Northern Spy.
Red Canada,		

Both Mr. Waterman and Mr. Helling were in attendance most of the time, the former enthusiastically urging the claims of Michigan as an apple State, and the latter explaining the character of the fruit preserving house established by them at Battle Creek, while Mr. Ilgenfritz attended to the general supervision of the display, and furnished such information as was desired in regard to the general character of Michigan as a fruit producing State.

The contributors to this exhibition of Michigan apples, besides those already mentioned, and those whose names may have been separated from their contributions, were: R. C. Fassett, and C. Harrington, Sandstone, H. W. Doney, Jackson, George Gavitt, Spring Harbor, all of Jackson county; L. L. Lance, Ganges, Allegan county; George Parmelee, Old Mission, Grand Traverse county; the South Haven Pomological Society, who sent a fine collection of apples grown on the fruit farms along the east shore of Lake Michigan, in Van Buren and Allegan counties; E. H. Reynolds, Levi Buck, Charles Atkinson, Caleb Ives, P. Fisher, E. Jose, W. Bloodgood, C. Toll, A. White, J. M. Davenport, T. E. Mason, G. W. Burchin, Wakeman Reynolds, and Robert Hender-shot, all of Monroe county; H. Warder, Clarkston, Oakland county; P. C. Davis, Kalamazoo, Kalamazoo county.

It will be seen from the preceding paragraph that the production of these excellent keeping apples is not confined to any one region or part of Michigan, but that east and west, north and south, and some interior localities are represented, so that the whole lower peninsular of Michigan may be truthfully described as a good apple-growing region, and the quality of the fruit exhibited at this particular display would indicate no very marked difference in the character of the fruit from one region or another, but every part exhibited fruit of high quality, maintaining in a remarkable manner the general excellence of the State for this important branch of culture.

Some idea of the impression produced by this display of Michigan apples at this season of the year can be gathered from such remarks as the following, which appeared in the newspapers at the time:

The Philadelphia Evening Bulletin.

"The Michigan apple display is one of the finest ever seen in this city, and reflects much credit upon the exhibitors from that State."

The Philadelphia Daily Times.

"The apples are as fresh and solid as if they were just grown, instead of being last year's, and the attraction towards them shows the deep interest the people have and their great wonderment at the display. The exhibit will well repay a visit."

The Pittsburg Commercial.

"In the center of the agricultural hall there is a very creditable display of apples

from the State of Michigan. This display is made by the Pomological Society of the State. Most of the varieties are in excellent condition. Indeed, it is surprising to see such a variety of fruit in such a state of preservation in the month of May."

The Board of International Judges not being organized in time for this exhibition, a special committee of experts was appointed by the chief of the Bureau of Agriculture, Mr. Burnett Landreth, to inspect the spring exhibition of winter fruit. In their report to Director-General A. T. Goshorn, they say:

A very good collection of apples from the Iowa State Horticultural Society; remarkably well kept apples from the fruit houses of N. Hellings & Brother, Battle Creek, Michigan; and a superior collection from the Michigan State Pomological Society, embracing forty varieties of kinds that have been kept in the ordinary farmhouse cellars of some of the members of the Society. As the season is very late for good keeping apples, the committee made notes of those varieties which seemed to them meritorious, taking as a standard of character the actual condition of each variety with the best known specimens of its own kind, as well of actual good quality. In the Iowa collection they note as among the best Tewkesbury, Winter Blush, Ortle and Rawle's Janet, Newtown Pippin, Jonathan, Winesap, and two not well known out of the west,—Hoover and Minkler,—as not having much to recommend them. In the collection of the Michigan State Pomological Society the finest were the Roxbury Russet, Rock, Willow Twig, Smith's Cider, Rhode Island Greening, Jonathan, Fallawater, Esopus Spitzenberg, both kinds of Newtown Pippins, and Red Canada. The last seems remarkably fine for this part of the country. Steele's Winter, as exhibited by Mr. John Waterman, of Plymouth, Michigan, were so nearly alike with Canada Red that if there was any difference the committee failed to detect it. Among the kinds little known east, but presenting points of interest at this season, the committee noted Detroit Red, Emerson, Well and Brookes' keeper. The collection from Messrs. Hellings' embraced forty dishes in ten varieties, all high colored, and all large and well grown fruit. They were all grown in Michigan, in 1875, and by the method pursued by them in their fruit-house, had even the stems as green and firm as when plucked from the trees. The Rhode Island Greenings and Northern Spies were fully equal to the best average specimens known. Newtown Pippin, Baldwin, Jonathan, and Westfield Seek-no-further, very good; Red Canada, Spitzenberg, and the others, not quite equal to those preserved in the common way.

This report was signed by Thomas Meehan, the well known editor of the *Gardeners' Monthly*, as chairman of the special committee.

II. DISPLAY OF SUMMER FRUIT.

The exhibition of fruit raised for summer and fall use took place in the Pomological Annex to Agricultural Hall. It was in this spacious building that the various States, and the British Provinces were to meet in friendly rivalry to display their varied fruit products. Although in late keeping apples, Michigan had no rival in the spring, it was to be expected that in the display of fruit for general purposes and for immediate consumption there would be many and formidable rivals. California, with all its wealth of pears, plums, grapes, apricots; Missouri, with its summer and fall apples and its grapes; Kansas, with its display of large apples; Nebraska, with its extensive range of climate, exhibiting apples in great beauty and perfection for present use; Iowa, Illinois, Ohio, Indiana, all with a fair showing of apples and pears; Massachusetts, with its great Warren Wilder collection of 300 varieties of pears; Connecticut, with its pears and apples, and Canada, with its apples, pears, plums, grapes and small fruits in great profusion and of excellent quality, were all on hand, and having ample appropriations of government funds, were enabled to ship their fruit by express, and consequently had it arrive in good time and in excellent condition, while the Michigan Pomologists were without funds, and consequently compelled to send their fruit by freight-trains, taking several weeks' time and a large amount of "shunting," so that the more delicate fruits, such as peaches, were spoiled before they reached Philadelphia.

The State Pomological Society appointed an excellent committee to collect the fruit and ship it, assigning to each member some specific duty. H. Dale Adams, of Galesburg, superintended the collection and shipment of apples; H. E. Bidwell, South Haven, peaches; I. E. Ilgenfritz, of Monroe, pears; J. G. Ramsdell, Traverse City, plums; E. Bradfield, Ada, grapes. But notwithstanding the diligence of these well known and zealous pomologists it was not till about the 26th of September, about two weeks after the time appointed for the display, that the Michigan tables began to give promise of a creditable exhibition in comparison with the displays surrounding them. At this time a shipment of fruit collected by Mr. Samuel Hoppin, of Bangor, Van Buren county, was unpacked, as were packages of grapes from St. Joseph, Berrien county, and of grapes and pears from Monroe, and some pears from Grand Traverse county, and grapes from Ada, and these gave character to the exhibition and filled up the hitherto lightly laden tables. The Canadian commissioner, who had really made an excellent display, came around and said it did look now as if Michigan would have a better display of fruit than Canada, but it was not too late to send for more fruit, and he would do it. From this time the Michigan fruit attracted much attention as, although but few peaches arrived in a presentable shape, those that were perfect made a very favorable impression. The plums, pears, and grapes came along in nice order, and from the close of September until the 15th of October, when the fruit exhibition in the Pomological Annex closed, Michigan fruit continued to attract great attention, while many of the exhibits from other States seemed to lose their luster, leaving Michigan fruit the most interesting feature of the hall. Had the fruit from Michigan arrived at the same time as did the fruit from Canada and the Western States it would have held a high preëminence, but coming late, when the fruit from elsewhere had lost some of its freshness and beauty, the contrast was very striking, and strongly in favor of Michigan fruit, although perhaps hardly a fair comparison under the circumstances. The rules adopted by the Centennial judges of giving awards of merit without regard to comparison with other exhibits of the same character avoided any invidious comparisons, and Michigan, like other States, received awards according to merit, comparisons being made only by private inspection.

The Ohio Farmer had an office near the entrance to agricultural hall during the Centennial, and its intelligent editor had ample opportunities for watching the comparative merits of the displays made. The following is from his report on the fruit displays:

"Those fruit producing districts most distant seem to be the most active, as Iowa, Michigan, Oregon, and Canada are almost daily in receipt of fresh exhibits. Those of Canada and Michigan may be especially referred to as of great superiority in both quantity and quality. Michigan takes the lead of any other State in the extent of her display, as indeed she has done during almost the entire season. In this display there are now over 2,500 plates of fruit, much of it of a very superior quality. Owing to the great distance they have to be transported, many of the peaches and grapes have been received in a damaged condition, but the apples and pears are magnificent. Northern Michigan is noted for the superior keeping qualities of its fruits, and as an evidence that this reputation is well earned, the Peninsular Farmers' Club, of Old Mission, Grand Traverse county, has sent specimens of Early Harvest, Sweet Bough, and other early apples, all in perfectly good condition. N. Chilson, of Battle Creek, sends about 150 varieties of apples, and other single exhibitors send as many or more. The Peninsular Farmers' Club have sent a collective exhibit of apples and pears, which for high coloring, soundness of fruit, and delicacy of flavor, is the finest we have ever seen. Four plates of Flemish Beauty pears, sent by Prof. Tracy, of this club, far excel any others in this hall. They are of large size, and show the finest coloring we have ever seen on any pears. The Michigan Agricultural College sends

nearly 300 varieties of potatoes, which show very fully their comparative merits when grown on the sandy loam of the College farm."

The display of fruit in Pomological annex was during the first fifteen days of October, all that could be reasonably desired or expected in a State so remote from the Centennial, and fully sustained, and even added to the reputation Michigan achieved by the display in May, previously. In making this display, Mr. Ilgenfritz was aided by the several members of the State Pomological Society committee, already named, and who attended in person to the unpacking of their later shipments.

Many foreign commissioners and visitors took a great interest in this exhibition of Michigan fruit, and Mr. Ilgenfritz reports that the French commissioners would not be satisfied until they had packed a box of twenty-eight of the most popular varieties, with names attached, to take with them to Paris as a present to the Horticultural Society of that city.

The Centennial Judges on Pomology made the following report on this display of Michigan fruits.

"S. Hoppin, Bangor, Michigan: This exhibit embraces ten varieties of peaches, including Early Ann, Early York, Morris's White, Hill's Chili, Jacques' Rareripec, and Barnard (said to be popular and an abundant bearer); apples, seventy-five varieties. These were, on the whole, rather superior to the same kinds as usually grown, especially the Baldwin (eleven inches around), Northern Spy, Rhode Island Greening, Gillyflower, Red Russet, Blenheim Pippin, Black Detroit (twelve and three-quarters inches), Gravenstein (twelve inches), Chenango Strawberry, Maiden's Blush, and Red Detroit. The last is considered a more valuable variety than the Black Detroit. In the collection is an improved Siberian Crab.

"H. E. Bidwell, South Haven, Michigan: Crawford late peaches, nine inches in circumference, clear and beautiful.

"I. S. Linderman, South Haven, Michigan: Thirty plates of grapes, four varieties: very good.

"C. Engle, Paw Paw, Michigan: Nine varieties of grapes,—Martha, Diana, and Wilder, all good; Salem, with small bunches, extra large and good berries: Barry, good; Concord, very fine: Ives, extra fine; on the whole, worthy of commendation for superior culture.

"E. Bradfield, Ada, Michigan: Nine varieties of grapes, one of which, Bradfield's prolific, has a large bunch, with berries three and one-quarter inches in circumference. This is a remarkably good looking black variety, but hardly ripe enough to warrant us in awarding to it special merit, which perhaps it might deserve when matured.

"Peninsular Farmers' Club, of Grand Traverse county, Michigan: Peaches, apples, and pears. Of the last two we have to speak in terms of the highest praise. The Bartlett Pears were not as large as are often grown, but were of a clear lemon color, with brilliant scarlet on the sunny side, and with a delicious aroma. The Flemish Beauty Pears were very highly colored, and measured ten and three-quarters and eleven and one-half inches. Among the apples, Porter measured ten and three-quarters by eleven inches around; Spice Sweet, twelve inches; Duchess of Oldenburgh, eleven and one-half inches; Red Astrachan, ten and three-quarters inches, and very beautiful. Taking the whole collection, it was very meritorious.

"A. O. Winchester, St. Joseph, Michigan: Twenty-five plates of grapes,—mostly Concord, Clinton, and Delaware, all good, and Diana, extra fine.

"J. H. Whittlesey, St. Joseph, Michigan: Eight kinds of grapes,—Rebecca, very good; Concord, very good; from the trellis, the vine extending forty-eight feet."

III. DISPLAY OF FALL AND WINTER FRUIT.

After October 15th, it became necessary to change the position of the Michigan fruit display from Pomological Annex to Agricultural Hall. This placed the Michigan exhibit in still greater prominence, as four tables, two on each side of the central fountain in the principal aisle of that hall were placed in charge of the Michigan delegation. Fresh arrivals of fall and winter fruit coming to

hand at this time, some of which had been exhibited at the State Fair at Jackson, three of the tables were devoted to the new fruit, and one to the best of the fruit from the Annex. Although Canada, Nova Scotia, Pennsylvania and some other States were assigned tables, nothing in the hall would compare with the beauty and attractiveness of the Michigan display, and although it was not intended to continue it more than ten days, the attractiveness of the great hall was so enhanced by it that Mr. Landreth, the chief of the Department of Agriculture, made a special request that it be continued until November 10th, the last day of the exhibition, and this was complied with.

One table was very tastefully spread by Mr. Chas. A. Ilgenfritz with the best fruit selected from the exhibit of Michigan in the Pomological Annex. Another table contained a magnificent display of grapes spread out by Mr. Bradfield, of Ada, 25 varieties of which were grown in his own vineyard, and a display of apples and grapes from the Grand Traverse region. The other two tables were laden with apples grown and collected by Mr. H. Dale Adams, of Galesburg. These were spread by Mr. Adams with great care and with an eye to the arrangement of colors. The whole display was labeled in large white letters on red cloth. "Michigan." Numerous cards were dispersed along the tables:

DISPLAY OF FRUIT BY THE MICHIGAN STATE POMOLOGICAL SOCIETY.
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That portion covered by fruit from Grand Traverse was neatly labeled with cards:

GRAND TRAVERSE FRUIT, CONTRIBUTED BY THE PENINSULA FARMERS' CLUB.
--

At the end of one of the tables was a colored enlargement of the seal of Michigan, and every plate was labeled with the name of the variety of fruit and a card on which was a lithograph copy of the seal of Michigan, and the plates were all neatly arranged on tables covered with white table cloths, presenting a very neat and tempting appearance. Some of the cards of the Society were placed between standards decorated with arbor vitæ. From these standards and along the center of the first two tables mentioned were wires from which hung fine specimens of grapes on limbs and bunches. The tables were flat, not composed of shelves raised one above the other as were the tables in Pomological Annex, and consequently a good view of the whole display on each table can be seen from either side. The tables were well laden with Michigan's choice apples, about 200 varieties, and grapes, and viewed from whatever aspect, they presented a most beautiful appearance.

There was nothing in all Agricultural Hall that was so attractive at this time as these tables of fruit, and, being in the center, they were constantly thronged with visitors. At the head of the tables stood two large plates of Detroit black and red apples, they shone so brightly and were so rich in color as to draw forth

many exclamations of delight from the visitors. "Oh, why," exclaimed one of the fair daughters of Eve, "why is such beautiful fruit spread out to tempt us, and yet we must not touch it."

The display of Grand Traverse fruit deserves high commendation. It was all so rich in color and so aromatic, that its very presence had a charm that was wholly indescribable. The most attractive specimens of apples were from Mr. George Parmelee's orchard near Old Mission. These were Maiden's Blush, Sweet Bough, Detroit Black, and Alexander. There were also some choice specimens of the Duchess of Oldenburgh, Spice Sweet, Tompkins Co. King, Twenty Ounce, Bailey Sweet, Northern Spy, Baldwin, and numerous other varieties, including some choice Golden Russets, from Marshall's orchard. Mr. Brinkman and Prof. W. W. Tracy also sent some choice fruit.

Judge Ramsdell exhibited a choice selection of grapes from his vineyard. As this is located in latitude 45, it is a matter of interest to mention the varieties that have ripened there in 1876, specimens of which were unexceptionally good, viz.: Wilder, Merrimac, Agawam, Israella, Delaware, Concord, Iona. Judge Ramsdell has undoubtedly an excellent location for his vineyard with a fine elevation, aspect and water protection. There are, however, many locations as good on the west side of Grand Traverse Bay.

Michigan grapes were well represented by Mr. E. Bradfield, of Ada, Kent county. He had 25 varieties of his own raising, besides a good collection from other growers. He has been particularly successful with the Iona, of which he displayed some very good specimens. His seedlings from the Concord were very large grapes, and produced quite a sensation among visitors. Mr. Bradfield deserves great credit not only for this very fine display of his own grapes, but for his energy and perseverance in making so large a collection. The grapes produced more surprise than the apples. People knew that Michigan could produce fine winter apples, but were not prepared to see this excellent exhibition of large and beautiful grapes. A gentleman and his daughter from Connecticut examined these grapes very carefully, and expressed great surprise at the size of Michigan grapes, as they said they grew the same varieties in Connecticut, but could not produce as large grapes. The Delawares and Isabellas greatly surprised them by the size they attained in Michigan.

Mr. I. E. Ilgenfritz, of Monroe, exhibited a collection of about 50 varieties of pears. He is himself an extensive grower, and many fine pears in the collection were from his own orchard, and besides these were some grown by Mr. E. W. Reynolds of the Dix, Doyenné du Comice, Beurré d'Anjou and other choice varieties, also specimens from the orchards of Mr. Caleb Ives, Mr. Compton, the South Haven Pomological Society, Mr. J. M. McNaughton, and Mr. H. D. Adams, Galesburg.

Michigan apples as displayed by H. Dale Adams, consisted of many varieties, but the best apples were the same as already named. Among them, however, was a very fine seedling apple contributed by Major Hopkins, Governor's Secretary. The apple was raised in his father's orchard, and is not only beautiful, but of rich and delicate flavor. Among the other contributors of very choice apples were Walter Sinclair, of Spring Lake; S. S. Bailey, Grand Rapids; Mr. Downs, Ada; Emmons Buel, and Bragg & Stearns, of Kalamazoo; Wm. Bair and Willis Judson, of Schoolcraft; Edward Flanders, of Galesburg; Dr. Southard, Kalamazoo; Abraham Olds, a fine collection from Van Buren county; Mr. B. W. Steere and others, Adrian; Eli Bidleman and

Deacon Selover, Coldwater; Mrs. Mary J. Merrill, Lansing, and many others. This display of fruit received high praise.

The Philadelphia Sunday Times, speaking of this last show of Michigan fruit, said:

"This magnificent display from Michigan opens the eyes of Philadelphians to the great resources of that State in fruit culture. Michigan may congratulate herself on the general admiration the display has excited."

The Philadelphia Daily Times:

"The products of the soil present as good a view of a State or country as one can get without an actual visit, and in Agricultural Hall, all countries and States are spread out to view and we know at once the nature of the soil, the climate, and its natural advantages, and in very many instances we are agreeably disappointed, our former ideas having been so distinctly opposite to what we see before us. Michigan is a striking instance of this, for the magnificent display of fruit which she has made quickly dispels the popular notion that her soil is not fertile enough nor her climate mild enough to be able to raise fruit to any extent and with any success."

The Philadelphia Sunday Times:

"The magnificent pomological exhibit of Michigan in Agricultural Hall consists of four large tables covered with a profusion of the finest specimens of apples, pears, and grapes. These are arranged with great taste, and their character and locality explained in the most courteous and intelligent manner. There are over 300 varieties of apples, of which 160 are quite universally cultivated; 15 varieties of pears, and 40 of grapes are here represented."

The Philadelphia Public Ledger:

"The pomological display in Agricultural Hall continues to attract very general attention from farmers and others engaged in agricultural pursuits. The collections of the Michigan State Pomological Society, under the supervision of Mr. Ilgenfritz, the representative of the fruit growers of the State, embraces nearly all that remains of the extensive exhibition lately seen in Pomological Annex. Four tables contain 315 varieties of apples and 46 of grapes. Prominent among the winter apples are beautiful specimens of Red Canada, Northern Spy, Jonathan, Wagener, Peck's Pleasant, King of Tompkins Co., Baldwin, and McClellan. The fall varieties include Maiden's Blush, Fall Pippin, and Twenty Ounce. The summer are Sweet Bough, Early Joe, Red Astrachan, Keswick Codlin. These varieties are worthy of cultivation most anywhere."

The Centennial correspondent of the Detroit Post described this last display of Michigan fruit, under date Philadelphia, Oct. 18, 1876, as follows:

"Although the Pomological annex has been abandoned, the display of fruit in Agricultural Hall (which is thronged all the time with a vast concourse of people) has concentrated more than ever, attention on Michigan fruit. Fortunately, some forty barrels of apples and boxes of grapes have arrived in prime condition, and Michigan has been assigned four tables,—two on each side of the great central fountain in Agricultural hall. These tables are flat, so that all that are on each table can be seen in one view, presenting a much more imposing scene than when the tables are composed of shelves rising toward the center.

"Mr. H. Dale Adams, of Galesburg, has been here the past ten days attending to the unpacking of the apples he has grown and collected in Michigan. He favored the flat table plan, and the result has proved the correctness of his views on this subject. To stand at one end of one of these tables closely covered with the fresh and beautiful winter apples of Michigan on plates arranged in ribbons of color like the flowers of the Centennial flower-beds, affords a sight which, at first glance, strikes the eye with delight. The beauty of the flowers, now gone, is transferred and made more durable in these rich and delicious fruits. There is nothing in this vast ten-acre hall that is half so attractive at the present time as these beautiful productions of Michigan orchards, and the people throng around the tables expressing their admiration in the most marked and emphatic manner. Ladies who are accustomed to see reflected the modest blush of beauty whenever they look at a mirror, stand in front of these tables and feel as if their charms were rivaled in the bewildering display; and, taken together, these charming visitors, with eyes sparkling with delight, and the tables with the beautiful tints of Michigan orchards and the aroma of the ripened fruit, fur-

nish a subject to which no artist could fully do justice on canvas. But great as is the admiration expressed at Michigan apples, it is even exceeded by the wonder and surprise at the display of Mr. Bradfield's collection of grapes.

"Mr. Bradfield, of Ada, it is well known, is an enthusiastic amateur grape-grower. He does not cultivate grapes as a business with which to make money. His business is converting Michigan wheat into 'Right Bower' flour, but he loves the grape and he has demonstrated that even the Iona, one of the most delicate of grapes in flavor and strength, can be grown successfully in Michigan, even forty miles inland. Of course he covers up his vines in winter, but he grows the grapes, and they have all the richness of flavor which has made the Delaware so popular, and are as large as the Catawba. Mr. Bradfield has here a magnificent display of Ionas, and some twenty-four other varieties besides; and also Iona wine of the vintage of 1871. But what has caused the most astonishment and brought out the greatest number of questions, which Mr. Bradfield has become hoarse in answering, is his display of large Concord seedlings [or 'Bradfield's Perfected Prolific.'] These are grapes raised from the seed of the Concord by Mr. Bradfield. They are fully three inches in circumference, and create a great sensation by their immense size. There are no hot-house grapes in the hall that are so large as these seedlings grown in the open air in Michigan. Mr. Bradfield claims nothing for these grapes, except their astonishing size, which claim is fully sustained. The fact that such large grapes can be raised in the open air in a Michigan climate is a subject of very earnest inquiry and comment. Some of these grapes are exhibited on plates, and some are suspended on wires over the table, and in both positions they are continually being pointed at by delicate kid gloves, and noted down in the note-books of visitors as the largest grapes yet seen. 'Have they been named?' 'No.' 'Were they grown in the open air?' 'Yes.' 'Do you sell the vines?' 'No.' 'Do you propagate them?' 'No.' And hundreds of other questions are constantly being put to Mr. Bradfield, until he is fairly bewildered, and he goes to his lodgings at night exhausted. But the next day the same array of questions are put, with variations, and the crowd of people still move along and admire.

"Judge Ramsdell is also here with a display of Grand Traverse pears, apples, and grapes, that fully sustains the high reputation of the beautiful Traverse Bay region for producing that rich coloring and delicate fragrance in fruit which cannot be excelled. Notwithstanding its high northern position, the Grand Traverse region has supplied fruit by every shipment from the commencement of the season,—Sept. 1st,—until now, when Michigan has at last attained her meridian splendor in this fruit display.

"The keeping qualities of Michigan apples have attracted the attention of buyers from Europe, and arrangements have been commenced for the direct shipment of cargoes of our winter apples to Iceland and England. The fact that Michigan Baldwins, Northern Spies, Red Canadas, Wageners, Russets, and Greenings can be shipped to Europe and sold at a good profit will open a wide market for Michigan fruit, and the extensive shipment of that fruit must result in increasing the wealth of the State."

VARIETIES EXHIBITED.

The following is a list of the varieties of apples and pears exhibited and the number of plates of each, including what were exhibited at the Pomological Annex:

APPLES.

Alexander, Plates 15; Alfriston Pippin, 3; American Beauty, 12; American (summer) Pearmain, 3; American Pippin, 3; Anglo American, 2; Aunt Hannah, 2; Autumn Strawberry, 10; Autumn Swaar, 15; Autumn Sweet Bough, 1; Bailey Spice, 2; Bailey Sweet, 7; Baker, 2; Baldwin, 45; Baltimore Belle, 4; Bars, 2; Beauty of Kent, 11; Bellflower, 15; Belmont, 25; Ben Davis, 5; Benoni, 5; Benton, 4; Better than Good, 1; Black, 2; Black Detroit, 8; Black Gilliflower, 1; Black Jack, 3; Black Mendon, 5; Black Pippin, 3; Blenheim Pippin, 15; Blue Pearmain, 6; Butter Sweet, 1; Broadwell, 2; Brown's Russet, 2; Bunker's Hill, 3; Canada Reinette, 7; Carthouse, 7; Champlain, 3; Cheeseborough Russet, 7; Chenango Strawberry, 17; Chester Pearmain, 2; Chilson's Seedling, 3; Clarkstone, 4; Clyde Beauty,

5; Cogswell, 8; Cooper, 3; Cornell's Fancy, 3; Columbia Russet, 2; Colvert, 20; Craig's Early, 1; Cranberry Pippin, 2; Chronicle, 3; Cumbell, 1; Cumberland Sweet, 6; Curtis Greening, 2; Curtis Sweet, 1; Daniel, 2; Danvers Winter Sweet, 2; Devonshire Quarrenden, 10; Doctor, 2; Domine, 5; Duchess of Oldenburgh, 20; Dyer, 3; Dykeman, 7; Early Harvest, 17; Early Joe, 5; Early Maiden, 5; Early Pennock, 7; Early Strawberry, 3; Egg Top, 12; English Russet, 5; Esopus Spitzenberg, 30; Fall Harvest, 1; Fall Jenneting, 5; Fall Orange, 2; Fallawater, 20; Fall Pippin, 30; Fall Queen of Kentucky, 2; Fall Seek-no-further, 1; Fall Wine, 4; Flower of Genesee, 15; Flushing Spitzenberg, 12; Foundling, 5; Forest, 4; Friend, 2; Garden Royal, 3; Garden Sweet, 3; Golden Pippin, 2; Golden Russet, 38; Golden Sweet, 5; Gloria Mundi, 9; Gravenstein, 15; Green Cheek, 1; Green Sweet, 4; Greenville, 2; Grimes Golden, 7; Hamilton, 2; Hans Early, 2; Hartford Sweet, 2; Haskel Sweet, 2; Hawley, 16; Hawthornden, 5; Herbutte, 3; Herefordshire Pearmain, 9; Hick's, 2; Holland Pippin, 6; Hollow Crown, 3; Horse, 3; Hubbardston Nonesuch, 10; Hubble, 5; Irish Russet, 3; Jeffries, 2; Jersey Sweet, 6; Jonathan, 30; Kaighn's Spitzenberg, 7; Keswick Codling, 5; King of Tompkins Co., 32; Klaproth, 4; Lady, 6; Lady Sweeting, 5; Lady Winter, 2; Landon, 2; Leicester Sweet, 2; Leland's Sweet, 2; Leyscomb, 2; Loudon Pippin, 3; Long Island Pearmain, 2; Lowell, 15; Lyman's Large Summer, 5; Lyman's Pumpkin, 2; McClellan, 2; Macomber, 2; Maiden's Blush, 22; Mahomet, 4; Mann, 5; Marston's Red Winter, 2; Mexico, 1; Michael Henry Pippin, 1; Millstone Red, 2; Minister, 4; Miller of New York, 5; Mother, 4; Munson Sweet, 6; Myer's Nonpareil, 3; Newark Pippin, 2; Newtown Pippin, 7; Newtown Spitzenberg, 5; Norton's Mellow, 16; Northern Spy, 43; Oakland County Seek-no-further, 5; Ohio Nonpareil, 8; Orchard Queen, 1; Orleans Beauty, 2; Ortleigh, 3; Paragon, 2; Peck's Pleasant, 22; Pennock's Red Winter, 10; Penn Vandevere, 1; Perry's Russet, 4; Pittsburg Pippin, 2; Pool's Indian, 3; Porter, 12; Porter Spitzenberg, 2; Pound Sweet, 3; Pound Royal, 3; Primate, 13; Progress, 2; Pomme Gris, 5; Pumpkin, 3; Pumpkin Russet, 5; Pumpkin Sweet, 4; Putnam Russet, 2; Putnam Keeper, 2; Rambo, 7; Ramsdell Sweet, 2; Rawle's Janet, 2; Ray's Red, 2; Rhode Island Greening, 40; Rome Beauty, 4; Rebecca, 3; Red Astrachan, 5; Red Canada, 25; Red Cheek Pippin, 2; Red Detroit, 5; Red Gilliflower, 5; Red and Green Sweet, 5; Red Russet, 5; Red Sweet Pippin, 5; Ribston Pippin, 17; Richard's Graft, 2; Richardson, 5; Rosy Red, 11; Roxbury Russet, 25; Rubicon, 14; St. Lawrence, 15; Saunders, 2; Scarlet Pearmain, 7; Seedling Pearmain, 3; Shawansee Beauty, 10; Shipman's Pippin, 2; Singleton, 3; Smith's Cider, 12; Smokehouse, 3; Snow, 30; Spice Sweet, 6; Stark, 5; Stocker, 1; Striped Gilliflower, 13; Striped Bellflower, 3; Summer Bellflower, 5; Summer Pippin, 5; Summer Queen, 8; Summer Rambo, 3; Summer Rose, 7; Summer Sweet, 1; Summer Sweet Paradise, 1; Summer Sebewing, 1; Superior Summer, 2; Sutton's Beauty, 2; Sweet Bough, 12; Sweet Maid, 2; Sweet Pearmain, 3; Sweet Russet, 7; Sweet Vandevere, 7; Talman Sweet, 28; Tetofsky, 5; Tewkesbury Winter Blush, 3; Trenton Early, 4; Tacea, 2; Tomtit Rambo, 2; Townsend, 1; Twenty Ounce, 52; Twin, 5; Vandevere, 8; Wagener, 23; Wall, 4; Walpole, 2; Wan Cambria, 2; Warwick, 2; Washington Strawberry, 8; Western Spy, 8; Westfield's Seek no-further, 25; Weherl's White Sweet, 3; Wetherby Favorite, 2; White Doctor, 3; White Fall Pippin, 1; White Greening, 2; White Pearmain, 7; White Pippin, 3; White Russet, 2; White Spanish Reinette, 3; White Streak, 3; Whittle Sweet, 2; Willow Twig, 3;

Wine, 1; Winter Golden, 1; Winter Pearmain, 3; Winter Pippin, 1; Winter Queen, 2; Winter Strodeber, 1; Winter Swaar, 18; Winter Sweet, 1; Winter Sweet Paradise, 4; Winthrop Greening, 5; Yellow Newtown Pippin, 3; Yellow Sweet, 1; York Imperial, 2. Total plates of apples, 1930. Total varieties of apples, 273.

PEARS.

Bartlett, plates, 25; Belle Lucrative, 7; Bergamot, 3; Beurré Adlem, 7; Beurré d'Arenberg, 2; Beurré Bosc, 8; Beurré Clairgeau, 8; Beurré d'Anjou, 18; Beurré Diel, 7; Beurré de Lesmire, 2; Beurré Easter, 5; Beurré Golden of Bilboa, 2; Beurré Goubalt, 7; Beurré Superfin, 13; Buffum, 10; Des Nonnes, 8; Dix, 7; Doyenné Boussock, 4; Doyenné d'Alençon, 5; Doyenné de Cercle, 2; Doyenné Gray, 4; Doyenné Rose, 2; Duchesse d'Angoulême, 8; Early Catharine, 2; Elder, 4; Flemish Beauty, 16; Fowelle, 3; Glout Moreau, 8; Hayer, 3; Hosenschenk, 3; Howell, 8; Kirtland, 2; Kingsessing, 5; Lawrence, 10; Louise bonne de Jersey, 10; Onondaga, 8; Oswego Beurré, 6; Passe Colmar, 2; Pratt, 3; Rostiezer, 3; Seckel, 6; Seigler, 2; Sheldon, 11; Sterling, 6; Stephen's Genesee, 12; Summer Bon Chrétien, 5; Tabuniste, 3; Tyson, 5; White Doyenné, 10; Winter Nelis, 6; Vicar of Winkfield, 7. Total plates of pears, 333.

CONTRIBUTORS OF MICHIGAN FRUIT.

So far as could be obtained, the following is a correct list of the contributors to the fruit exhibits from Michigan, arranged by counties:

ALLEGAN COUNTY.—Lake Shore Pomological Society of Douglas and Ganges,—apples, pears, peaches, and grapes. D. W. Wiley, Douglas,—samples of same. A. Hamilton, Saugatuck,—apples. L. L. Lance, Ganges,—apples.

ANTRIM COUNTY.—R. Sherman, Elk Rapids,—choice collection of apples.

BERRIEN COUNTY.—A. O. Winchester, St. Joseph,—Salem and Diana grapes. John Whittlesey, St. Joseph,—Agawam, Wilder, Northern Muscadine, Concord, Ives', Rebecca, Hartford, and Iona grapes. John Maitland, St. Joseph,—Martha grapes. Thomas Archer, St. Joseph,—Delaware grapes. John Irwin, Buchanan,—apples.

BRANCH COUNTY.—The collection of fruit from this county was forwarded by Eli Bidleman, and contributed by F. H. Foster, F. Olds, and J. Shaw, of Union City; J. Shenvernen and William R. Cair, of Batavia; J. H. Lawrence, of California; H. Wilson and F. H. Atwater, of Kinderhook; Dea. Selover, of Coldwater.

CASS COUNTY.—B. Hathaway, Little Prairie Ronde, fine specimens of Northern Spy apples.

GENESEE COUNTY.—Fruit collected and forwarded by Augustus Root and C. H. Rockwood, Flint. N. T. Thurber, Fenton, also sent a good collection.

GRAND TRAVERSE COUNTY.—J. G. Ramsdell, Traverse City, a fine collection of plums, grapes, etc. Peninsula Farmers' Club, a collection of fruit: George Parmelee, Prof. W. W. Tracy, William Marshall, H. K. Brinkman, Old Mission.

HILLSDALE COUNTY.—Dr. Tims, F. S. Blackman, Sylvester Clark, C. R. Coryell, F. Kirby, H. K. Abbott, and H. B. Chapman.

INGHAM COUNTY.—G. W. Brown and Mrs. Mary J. Merrill, Lansing,—extra fine samples of fruit. Agricultural College, display of potatoes.

IONIA COUNTY.—N. E. Smith and C. Hosford, Ionia,—exhibit of Ionia fruit.

JACKSON COUNTY.—Choice samples of fruit by Geo. Gavoit, Spring Arbor: A. A. Bliss, Jackson; R. C. Fassett, C. Harrington, Elijah Bemis, and Robt. Bradford, Sandstone; H. H. Daniels, Blackman; H. J. Crego, Liberty, and J. N. Peck, Henrietta.

KALAMAZOO COUNTY.—H. Dale Adams, Galesburg,—samples of autumnal Swaar, Jersey Sweet, and Northern Spy apples: also a large collection of apples from various counties. Among the other fruit exhibitors were William Bair and W. Judson, of Schoolcraft; E. Buell, J. Den Bleyker, E. H. Wheeler, E. Buel, C. P. Davis, C. N. Davis, N. J. Strong, Dr. Southard, Bragg & Stearns, and J. S. M. Grundy, of Kalamazoo; E. P. Flanders, J. C. Blake, and J. P. McNaughton, of Galesburg.

KENT COUNTY.—E. Bradfield, Ada,—thirty-six varieties of grapes. Wm. Rowe, Walker,—apples. H. Downs, Ada,—samples of fruit. The Grand River Valley Horticultural Society, Grand Rapids, sent a general collection of fruit.

LENAWEE COUNTY.—The Lenawee Farmers' Club sent a large collection of apples, embracing 107 varieties, carefully packed, the names of the growers and the number contributed by each being as follows: From Adrian,—B. W. Steere, 60; John Hunt, 3; Fred. Meddick, 12; Charles Bradish, 6; H. N. Knowles, 1; Ira Ladd, 12. From Dover,—Smith Thompson, 2; Daniel Holdridge, 2; James Therber, 1. From Macon,—Israel Pennington, 28; Joseph Pennington, 5. From Blissfield,—W. Grady, 13; Dr. R. B. C. Newcomb, 20; M. H. Cogswell, 3; Luther Smith, 1; George Sisson, 3; R. B. French, 3; H. B. Clark, 3; L. E. Goodrich, 15. From Raisin,—E. B. Hibbard, 14; Horace Hoxsie, 14; Loyal Lovejoy, 16. From Palmyra,—Peter Collar, 6; Henry Furbeck, 6; S. B. Mann, 8. From Rome,—Samuel Reed, 1. From Canandaigua,—J. Lee, 5. From Ogden,—W. H. Cheeney, 9. From Madison,—T. J. Gibbs, 8. From Ridgeway,—John Britton, 21. From Tecumseh,—J. Kennedy, 18. The pears are also excellent, and were contributed by J. G. Glenathen, Henry Furbeck, N. J. Strong, and F. Lewis. A. Sigler, of Adrian, contributed a very good display of foreign grapes.

MONROE COUNTY.—The Diedrich Vineyard.—Delaware, Concord, Norton's Va., Seedling, and Catawba wines. Point aux Peaux Wine Company,—Concord and Delaware wines. E. Summer,—blackwalnuts, hazel, and hickory nuts. J. M. Loose,—pears. I. E. Ilgenfritz,—collection of fifty varieties of pears. Reynolds, Lewis & Co.,—selection of apples. Chas. Atkinson, B. Compton, G. Brinkerhoff, Monroe,—grapes and other fruits.

OAKLAND COUNTY.—H. Walter and Mrs. G. Kirby, Clarkston. M. Delano, Oxford,—apples and other fruits.

OCEANA COUNTY.—E. J. Shirtz, Hart,—apples and plums. Oceana County Pomological Society,—forty-eight varieties of apples, nine of pears, three of peaches, and three of crab apples.

OTTAWA COUNTY.—Walter G. Sinclair and Hunter Savidge, Spring Lake.—Baldwin apples, grapes. Thomas Wilde, Berlin,—apples.

SAGINAW COUNTY.—E. F. Guild, East Saginaw,—choice collection of grapes.

ST. JOSEPH COUNTY.—A. G. True, Three Rivers,—collection of fruit.

VAN BUREN COUNTY.—South Haven Pomological Society,—a general collection of fruit elsewhere noticed. Paw Paw: C. Engle,—peaches and grapes. B. W. Abrams and J. Q. Morse,—apples. South Haven: D. O. Loveday and

A. J. Perrin,—varieties of fruit. Keeler: John Rosevelt,—choice samples of fruit. Decatur: A. A. Olds,—grapes, apples and pears. Lawrence: H. G. Barnes,—varieties of fruit. Lawton: Judge Lawton,—apples and grapes. E. Warner,—pears, peaches, grapes, and apples. William Jones, Mr. Love, and D. Spice,—varieties of fruit.

WAYNE COUNTY.—Wayne County Horticultural Society,—collection of apples. George H. Hopkins,—seedling apples. J. B. Bloss, Detroit,—apples. J. W. Humphrey, Plymouth,—apples. John Waterman, Northville,—winter apples.

THE COUNTIES REPRESENTED, AND RESULTS.

It will be seen that twenty-two counties were represented in the displays of fruit. Only about half of this number could be said to have more than a very meagre representation of their real capacity as fruit growing counties, and yet with this very limited collection, Michigan made a display which challenged competition, and commanded universal admiration, and it was a purely voluntary offering. If the State had done as some other States did,—provide ample funds for the purchase, collection, rapid transit, and exhibition of fruit,—it would have been a display of Michigan's capacity as a fruit-growing State, such as would have been of incalculable advantage to the State. Especially would its peaches have made a fine display. Even as it was, with free offerings on the part of fruit growers and gratuitous labors on the part of those who organized and achieved success, the result has been gratifying. It has already shown itself in a large demand in the eastern and even western cities for Michigan apples, while a business with Europe has been commenced which can be only limited by the production.

The very States that claimed the closest rivalry with Michigan in the production of apples,—Iowa, Nebraska, and Kansas,—are largely indebted to Michigan for their supply of that fruit during fall and spring, long after their own crops have entirely vanished from their markets.

The Iowa Producer, in a recent humorous article, well illustrated the situation in regard to Michigan apples in western States:

"The Professor and I have been eating our lunch of sandwiches and doughnuts, topped out with an apple apiece. While munching the last named article, we fell to talking about apples, and the Professor asked me where these which we were eating came from, remarking at the same time upon the reputation Iowa has as a fruit growing State. He went on to speak of the splendid show made by us at the Philadelphia Exhibition last year, and of the many triumphs which Iowa Pomologists had enjoyed over their eastern brethren. All this was very pleasing, and well calculated to make an old resident feel quite well satisfied with the world in general, and the State of Iowa in particular. But when he repeated his question as to where the apples we were eating came from, I must confess to not feeling quite so much flattered. I was obliged to say that I believed they came from Michigan; whereupon, the Professor, not being a practical fruit grower, asked why it was that a State which produced such splendid apples as Iowa showed at Philadelphia, should go to Michigan for her winter supply.

"In his characteristic way, he then ran on about Michigan. 'What a wonderful State that must be,' he said. 'Why, I've heard that our dealers in town sell only Michigan apples. You can't buy any other kind. If you go to any of them and ask for a barrel of apples, they always roll out one marked Michigan.' I tried to slip in a word, but he ran on: 'Once in a while a farmer near town does sell a few apples, but they do not begin to supply the demand. If you can raise apples as well as you claim to be able to, I'd like to know why you don't raise enough so that I can buy some. Here I am living in the State which is claimed to grow the finest apples in the world, and yet I can't get any for my own eating. I must eat the second-rate apples of that

so-called second-rate apple State,—Michigan. I am afraid that there is some humbug in this matter. You pick out from the apples you grow a few of the very best ones, and send a committee over the State to gather up the very finest of these again, and then go before the world claiming that your double,—yes, trebly, and still oftener, picked fruits, are a sample of your Iowa apples. Bring on your nice apples; I will take a barrel of them any day, if you will tell me where I can find them. My palate longs for taste of these Iowa beauties.' I managed here to head off the Professor as he paused to take a huge bite from the side of the Baldwin he held in his hand. 'You must bear in mind, Professor,' said I, 'that the State is young yet, and that the orchards are not yet in full bearing; but when they are older no doubt—' The mouthful of Baldwin disappeared, and my sentence was drowned, 'Get out with such an excuse. Don't I know that practically the apple producing region in Michigan is no older than the eastern third of Iowa. Why does not that eastern third furnish us with apples? If you raise apples so well there, why is it that Michigan apples are brought *right through* and sold in our markets? I am no Pomologist, but I have read a good deal of political economy, and I would like to have you show why it is possible for Michigan, which you say is not so good an apple State as Iowa, to send her fruit here five hundred miles by costly railroad freights, and yet sell them at such rates as to keep out the competition of home orchardists. I suspect that you don't raise enough to supply the home demand even.'

"I had an appointment with a student which compelled me to leave the Professor at that moment, and I am afraid he thinks he got the better of me in the talk; but I am confident I shall beat him out when we eat our next lunch; and yet the more I think of it, the more I ask the question, why is it that these Michigan grown fruits are so largely sold in Iowa?"

Another result which must be evident as following the successful display of Michigan fruit at the Centennial is the encouragement which fruit growers receive to continue taking good care of their orchards and planting more trees. Michigan fruit will now command fair, living prices in all the markets of the world. There is practically no limit to the demand, and the business of exportation will only stop each season when the supply ceases.

[This is an endeavor to give in permanent form a record of one of the most important efforts ever made by the State Pomological Society to place Michigan pomology in a true light before the world. The record is imperfect, and undoubtedly some contributors do not receive all the credit they deserve, but as no provision was made for clerical labor, no official record was kept, and the information here given is collected under many disadvantages. No omissions are designedly made, and the fullest credit has been given where the facts could be obtained. Should the Society ever make another important public exhibition of this character it is to be hoped that some system of individual entries will be adopted similar to that so successful at State Fairs, so that the press can obtain information that can be relied on as accurate, and all uncertainty avoided.]

PREMIUMS AWARDED.

The following are the premiums awarded by the Centennial Bureau of Awards for Michigan fruit:

DIPLOMAS AND MEDALS AWARDED

Michigan State Pomological Society for continuous exhibits of fruits.

J. W. Humphrey, Plymouth.....	Apples.
Michigan State Pomological Society.....	Peaches and Plums.
Michigan State Pomological Society.....	Apples.
J. W. Humphrey, Plymouth.....	Apples.

B. Hathaway, Little Prairie Ronde.....	Apples.
E. Bradfield, Ada.....	Grapes.
A. A. Olds, Hamilton.....	Apples.
N. & C. Chilson, Battle Creek.....	Apples.
H. Dale Adams, Galesburg.....	Apples and Pears.
Horticultural Dep't State Agricultural College, Lansing..	Potatoes.
N. Helling & Brothers, Battle Creek.....	Apples.

REPORTS OF CENTENNIAL JUDGES.

The reports of the Centennial Judges on Fruit were written by Mr. Thomas Meehan, with the approval of the following group of judges: W. L. Schaffer, A. W. Harrison, Josiah Hoopes, Wm. Parry, and Ed. Satterthwait.

To the Michigan State Pomological Society an award was granted on the recommendation of the Judges, for the following reasons: "That it exhibited continuously from near the opening of the Exposition to its close, the fruits of Michigan, furnishing thereby one of the most instructive and valuable features of the Pomological Department."

To H. Dale Adams, Galesburg, Mich., an award granted for the following reasons: "That his collection of sixty varieties of apples and sixteen of pears exhibited during the week ending October 19, were of general excellence, the Baldwin (twelve inches round), Jonathan, McClellan, Golden Russet, and Hopkins being superior to the average of these varieties."

To Edward Bradfield, Ada, Mich., an award was granted for the following reasons: "That during the week ending October 19, 1876, he exhibited twenty-five kinds* of grapes from his part of the State, and though growing in a district where vines have to be buried under ground in winter, were yet of general excellence.

To J. W. Humphrey, Plymouth, Wayne county, two awards were granted, for the following reasons:

1. For an excellent collection (forty-eight varieties) of exclusively summer and autumn apples, including only recognized and useful varieties.
2. That during the week ending Oct. 19, 1876, he exhibited a remarkably fine collection of apples, embracing 150 varieties, correctly named, of good flavor and high color.

To the Horticultural Department State Agricultural College, Lansing, an award was granted for the following reasons:

This exhibit of 258 varieties of potatoes, forms a collection that is highly instructive to the people of Michigan, and is therefore highly meritorious.

The above are all the reports that have come to hand at the time of closing this article. Personal application was made to General Walker, chief of the Bureau of Awards, and cards sent to each exhibitor for copies of these reports. General Walker refused the privilege of copying them. Mr. B. Hathaway, of Little Prairie Ronde, wrote he had not received the report in his case, and no reply was received from the balance of the exhibitors receiving awards, except those whose exhibits are here reported on. The long and unreasonable delay in publishing the reports of judges, or in permitting the press to publish them,

*In a letter to the writer of this article, Mr. Bradfield says: "Below is a list of the grapes exhibited by me from my own vineyard: Iona, Israella, Delaware, Diana, Concord, Eumelan, Clinton, Hartford, Sigler, Walter, Coriello, Rogers' No. 4, No. 19, Salem, Concord Seedling, Allen's Hybrid, Adirondack, Bradfield's Perfected, Cynthia, Creveling, Isabella, Taylor's Bullitt, Royal Muscadine, Richard Bradfield's Seedling, York Madeira, Black Cluster, Alvey, Northern Muscadine, and Union Village. You will perceive there are thirty varieties, but as there were two or three I could not distinguish when they were unpacked, I called it twenty-five varieties."

was a serious drawback, and deprived thousands of exhibitors from receiving the full benefit of the awards.

THE LOCAL SOCIETIES.

The various local organizations, such as the South Haven Pomological Society, the Lake Shore Pomological Society (Saugatuck and Ganges), the Peninsular Farmers' Club, Grand Traverse; the Grand River Valley Horticultural Society, the Lenawee County Farmers' Club, of Adrian, and the Wayne County Horticultural Society, made excellent displays, but were not, it appears, all so distinctively entered on the books of the judges, nor as distinctively credited by cards on the tables as to enable the judges to make recommendations in regard to them; and for the same reason the press was unable to give them all the credit which was their due. Had each exhibitor received proper credit by entries and by cards, the number of awards to Michigan fruit growers and societies would have been much greater, as the chairman of the group of judges, Mr. Thomas Meehan, was exceedingly careful to give proper credit wherever he could find out it was justly due. No articles should ever be sent to such an exhibition without being accompanied by the name of the grower or exhibitor, and an advisory invoice or application for entry properly filled up, should be sent by mail to consignee. Then the officer in charge would have material with which to give the proper and needful information to judges, the press, and interested visitors. Although in almost daily attendance during the exhibition, the fact that several of the above named societies were exhibitors was not discovered by me until after the close of the exhibition, as with the exception of the South Haven Pomological Society and the Peninsular Farmers' Club there appeared to be no special division assigned any of them designated by card or otherwise. I make this statement, not to complain of the arrangement or want of arrangement, but to explain why more prominence is not given to these respective organizations in the body of the article. The presumption is that they all did well, because in the aggregate the exhibitions of Michigan fruit commanded unqualified praise and universal commendation.

GRAND HAVEN, Mich.

[NOTE BY SECRETARY.—The award to the State Pomological Society for peaches and plums was undoubtedly made for the peaches exhibited by the South Haven Pomological Society, and for the plums exhibited by Judge Ramsdell. It should be recollected that the exhibits made by other contributors, as by the Lenawee County Farmers' Club, by Mr. Hoppin, of Van Buren county, of pears by Mr. Ilgenfritz, by the Peninsular Farmers' Club, etc., were all included in the general award to the State Pomological Society.]

SAVE THE FORESTS.

THE CLIMATIC RESULTS OF THE EXTENSIVE CUTTING AWAY OF OUR FORESTS IN THE PROCESS OF CLEARING OUR FARMS.

BY T. T. LYON.

In approaching the consideration of this somewhat abstruse and complex subject, we may be excused for treating it not so much upon general principles as in connection with the circumstances which may be assumed to affect the problem in our own lake-engirdled State. In so doing we may first glance at the conditions existing prior to the advent of the white man, before whose march the forests melt away, almost as if touched by the wand of a magician.

The prevalent winds of our region are, as doubtless they ever have been, from the southwest, coming down from the arid, central regions of the continent, shorn of their moisture, and impressing upon the broad valleys of the Missouri and the upper Mississippi many of the climatic peculiarities that so distinguish the entire region, prominent among which, as we think may be reasonably assumed, is its comparatively rainless and treeless character. Resting, as for a time they do, upon the broad waters of Lake Michigan, and becoming in some degree imbued with its moisture, how wonderfully is the scene changed as they reach the shores of our peninsula. The same winds that for long ages have on the western plains fanned the flames annually lighted by the red man, to open to him the autumnal hunting grounds of Iowa, Illinois, and Wisconsin, by sweeping away even the beginnings of forest growths, find their power for this purpose so far quenched before reaching our shores they are no longer competent to the task thus assigned them, but yield to the influence of the lake-given moisture, which, in despite of autumn fires and summer drought, covers our State with umbrageous forests. The effects of such covering are to check the radiation of heat during clear, still weather, and in fact in a great measure prevent it; while at the same time evaporation of the surface moisture with the constant and rapid elimination of heat in a latent condition, which would otherwise occur, are greatly impeded by the checking of the velocity of the lower or surface stratum of the wind. The importance of this check upon evaporation from the soil will be the better understood and appreciated if we recall the fact that, in the process of evaporating a given amount of water, an amount of heat

is carried away in a latent condition five and one-half times as great as would suffice to raise such amount of water from the freezing to the boiling point.

It is conceded to be true that any vegetable growth upon the soil, whether of timber or otherwise, takes from the soil and dissipates into the atmosphere a very considerable amount of moisture, but every one conversant with forests will be aware of the fact that such grounds are usually sufficiently moist for a considerable period after naked or cultivated soils manifest suffering from drought. A forest growth, while it checks the loss of heat and moisture by evaporation, at the same time excludes, in a measure, the direct rays of the sun, so that the ultimate result is a general equalizing of the amounts of both warmth and moisture, and an avoidance of the extremes in either direction that would in other circumstances be likely to occur.

It is also the conviction of many persons of high scientific reputation, that timber growths exert an important influence upon the rainfall of a country; but upon this point there are wide differences of opinion, hence we omit any direct consideration of this point and content ourselves with the assumption that moisture, saved to the soil by checking its dissipation, is nearly if not quite as valuable to lands in need of it as an actually increased amount of rainfall. It will be observed that our reasoning is directed solely to cases involving possible lack of moisture. To cases of excessive moisture, and hence demanding provisions for drainage, the reasoning can only apply after the requisite provisions for drainage have been supplied.

The settlement of a country, at least by such a people as ours, involves the extensive opening of farms, and, as a consequence, the wholesale destruction of the timber; and we take occasion to remark that this element in the problem has now been operative for half a century, since the settlement of the State may be said to have commenced—a period sufficiently long to enable us, by a careful retrospect, to draw important and well-grounded deductions from its experiences. The early settlers of Michigan, if we leave out of the account the earlier French fur traders or “voyageurs” who came mainly from New York and New England, bringing with them the love of fruits and flowers so characteristic of those regions; and although they generally seem at first to have had little confidence in the capacity of their chosen home for these pursuits, the success of the earlier trials soon begat an increase of such confidence. It is, even now, a fact within the recollection of all that, wherever a nook was carved from the primeval forests, our sturdy pioneers not only reaped rich returns in teeming fields of grain, but they were also favored with Pomona’s bountiful gifts, with a certainty that left little occasion to fear or doubt as to their future permanency. But, alas! for the vanity of such hopes. The axe of the hardy pioneer was steadily laying low the forest before it; farm after farm was opened out of the forest and subjected to the ameliorating influences of cultivation, and as few of these farms were large, continuous lines of clearing began to stretch along our streets and highways, while timber preserves adjoined each other in continuous lines along the rear of the farms, leaving long vistas of open country, more commonly in easterly and westerly lines to invite the free sweep of the prevailing winds in those directions. The continuation of this process gradually changed the aspect of broad areas of country from that of dense timber to something approaching that of the prairies of the farther west; till at the present time, such comparatively tender fruits as the peach which, in earlier days, was almost as sure of a crop of fruit as of the return of the proper season, has come to be so uncertain that its cultivation is, to a great extent,

abandoned throughout the earlier settled regions of the State; while some of the very finest varieties of apples, and pears, of whose hardiness no fears were formerly entertained, have come to be so far doubtful in this particular that, at least in many localities, they are either very sparsely planted or omitted altogether. The wheat crop also—once one of the staple products of Michigan, is, in part at least, by this change from shelter to exposure, rendered so unreliable and unprofitable that, in many places, the product has ceased to be adequate to even the home demand. Some people are disposed to assume, as the cause of this change, that the general temperature of our country, and indeed of the world, is gradually becoming colder in consequence of the diminution of its central heat, while others resort for an explanation to the supposition that such seasons of unusual cold or heat occur in cycles of greater or less extent; and yet others assume that such paroxysms are the result of fortuitous circumstances growing out of meteorological combinations too complex for analysis with our present knowledge of the subject. We, however, can but regard these assumptions as the outcropping of that innate perversity of the human mind, in the indulgence of which many persons seek to evade the consciousness that misfortune may have come upon them as the result of their own inconsiderate misdoing. In fact there can, in this case, be no necessity for a resort to such reasoning, inasmuch as the application to the problem, of the well known and unquestioned laws of physical science suffices for its solution. To merely change the phraseology of a conclusion heretofore reached—while the forest covering of a country suffices, under ordinary circumstances, to restrain both the radiation of heat, and its dissipation through the process of evaporation, till a paroxysm of cold shall have passed, and thus to avoid the occurrences of very low temperatures, the free exposure of the surface of cleared and cultivated lands occasions a maximum radiation of heat, during clear or otherwise favorable weather; while the impinging of the winds directly upon such exposed surface by carrying off moisture in the form of vapor, still more rapidly dissipates both the heat and moisture of the soil. The effect of the operation of one or both these causes upon open lands, must, therefore, inevitably be to so reduce the surface temperature of such lands as to increase their liability to drouth, in case of the non-occurrence of timely rains; while, in winter, occasional paroxysms of severe cold will unavoidably induce a greater diminution of temperature, in such exposed localities, than in those protected by a covering of forest.

But *cui bono?* asks the farmer, whose broad acres have been assured to him by the government, for the purpose of its improvement, and whose wealth and even his means of subsistence must be wrung from these very acres, by first depriving them of their leafy covering, and subjecting them to the influences that are alleged to have wrought such unfavorable results. The answer to this plausible and, at first thought, apparently insurmountable obstacle, in the way of a practical use of the facts we have so far endeavored to elucidate, must, as a matter of course, consist in the devising of a plan for accomplishing, as far as practicable, both these important objects, in harmony with each other.

In some European countries the government assumes to dictate to each landholder how much and which of the timber growing upon his lands he shall, from year to year, be permitted to remove. And the cutting away of forests, in such countries, is thus kept within what the government decides to be judicious limits. But, in our country, in which all governmental authority is but the expression of the aggregated will of the people, our educational machinery

has an important work to accomplish, ere our American sovereigns will have acquired sufficient wisdom to fully comprehend that the importance of this object would warrant them in conceding to their rulers so direct a control over what they have come to esteem as part and parcel of the right of individual ownership of property. Admitting, therefore, the impracticability of securing governmental control, in this particular, we come next to consider the possibility of accomplishing the result through voluntary agency.

Our farm owners, almost universally, consider a certain portion of timber preserve as an essential element in the making up of a good farm. The proportion requisite for this purpose will vary in accordance with the taste or fancy of the farmer. For our present purpose, we will assume that ten acres will be sufficient, as a permanent preserve, upon each farm of eighty acres. It is the more common practice to locate such preserve in a compact body, at the rear of the farm; but let us consider the effect, if, instead of so doing, the timber were left in a belt, or windbreak, extending the entire length of the west and north sides of such farms, and that in case of larger or smaller farms the general purpose had been carried out of preserving a windbreak as above proposed, about each eighty acres of such farms. A moment's consideration will suffice for the discovery that the entire country would in such case, be cut up by such timber belts into parcels about seventy rods east and west by one hundred and fifty rods north and south.

The fact will doubtless be urged that throughout a very large portion of the State it is already too late for the preservation of such belts, the lands having long since been cleared and improved. This difficulty, although serious, as far as immediate results are concerned, may be remedied by planting; and, if immediate results are judged important enough to warrant the increased expense, trees of considerable size may be employed, or by sowing the seeds of timber trees if preferred,—both practices being already in vogue, for kindred purposes, in many of the older sections of the State. It will also be readily seen that this object may be farther subserved by the free planting of roadside trees; also by planting rows of trees along the sides of lanes and fields, where the location of such is intended to be permanent; and especially by the grouping of trees and shrubs about dwellings and other farm buildings—an act for which the tenants of the farm yard will not fail to return their thanks, if in no other way, by the diminished expense of their keeping, and doubtless, also by their improved thrift. We are certain to be reminded that the cutting away of timber, and the leaving of a belt of forest grown trees suddenly exposed to the full force of the wind, is likely to result in the uprooting and death of many such, as a consequence of such exposure. With densely grown timber suddenly exposed in this manner such loss must doubtless to some extent occur, and such trees be removed and the timber utilized as best they may be; but the younger growths will develop all the more rapidly, in consequence of such removal, and when grown will be little liable to such objection: while if the stock be kept away from such preserve, it will very soon become densely filled with a young and thrifty timber growth, ready to take the place of the older trees as they shall fail and require removal. It must also be borne in mind that the process of clearing the lands along the sides of such timber belts will usually be a gradual one, giving time for growth to, at least partially, adapt itself to the change of circumstances.

Having thus pointed out a possible means of evading, at least in part, the unfavorable climatic results under consideration, we next come to consider the

question of its practicability. And, inasmuch as the process must necessarily be almost entirely a voluntary one, the question first arises—how can the requisite knowledge and interest in the subject, among those directly interested, be secured, and how can adequate motives be supplied to induce the requisite action?

Men are imitative beings, and it will doubtless prove to be the case in this, as in other things, that when a few thinking, practical men shall be induced to undertake this problem and shall display its results in their own cases, the mass of the people will not be slow to take the cue from them, and move forward in a similar direction. The recent impetus to roadside tree planting, growing out of a simple suggestion in the proclamation of Gov. Bagley, so timed as to touch a vulnerable point in the consciousness of our people, is an illustration of the ease with which people may be moved in such a matter, under a favorable concurrence of circumstances.

Some years since, under the stimulus of such facts as have been herein adduced, the Legislature of this State published a report upon this subject, and at the same time so amended the highway law of the State as to provide for the allowance of labor applied in the planting of roadside trees in the payment of highway taxes. Much good in this direction has doubtless resulted from this enactment. For the encouragement of the planting of belts of trees, and for the preservation of such belts, on lands to be cleared, as wind-breaks, in the manner proposed, we suggest that the Legislature be memorialized in favor of the enactment of a law exempting from taxation lands so occupied, under proper restrictions and stipulations. My reason for the conviction that a law of this character might be rendered more or less operative, is, that the average man has no more sensitive nerve in his entire system, than that connected with his pocket, and that a call from the tax-gatherer, no matter for how slight a sum, is sure to produce a stricture in that region. Such memorialists should also urge upon the Legislature the importance of some definite, effective, and permanent measures for the general dissemination of facts bearing upon this subject; and since it can by no possibility be held to be other than one of universal interest, and that of a permanent character, such measures should be adequate to the bringing of such facts directly home to the apprehension of the masses of our people, as well as to the perpetuation of this process so long as its operation shall be found needful.

In consideration also of the lamentable lack of information among large classes of our population on the subject of varieties of timber trees, suitable for such purpose, and of the best modes of management, these particulars should hold a prominent place among the facts to be disseminated; and as the most natural home sources for the elaboration of such information, we suggest the State Board of Agriculture, the Faculty of the Agricultural College, and the State Pomological Society, and their annual volumes of transactions, as convenient vehicles for its dissemination, at least in part. We suggest also, that the State Agricultural Society, the county and other local societies, and also the State Pomological Society, be each urged to offer premiums for the best and most effective windbreaks, of natural growth, as well as for artificial plantations for the purpose; and they should doubtless at the same time be urged to adopt similar measures for the encouragement of ornamental and protective planting of trees and shrubbery, about dwellings, farm yards, and buildings, so many of which are to be seen, standing stark and treeless, along the borders of our highways. Inasmuch, also, as the location of such preserve or plantation, except

possibly in a level country, must more or less affect its value or usefulness as a protection against the wind, this consideration should doubtless enter into the estimate of its value for such purpose.

In considering the importance of this subject, and the necessity for concerted action respecting it, it must by no means be forgotten that the evil has been long at work, and that its operation is by no means at an end; that it is not through the opening of a single farm, or even of dozens of contiguous farms, that it acquires a serious magnitude; but rather, it is by the covering of broad stretches of country with thousands of cleared-up farms, and thus bringing extensive areas of once sheltered lands to a condition approaching that of the treeless regions of the "Great West," that we have accomplished the process of degrading the climate of such regions to something approaching the severity of theirs. For the fact that we have failed to fully reach their level, in this respect, we are indebted less to our wisdom or forethought, than to the unfailing influence of circumjacent waters of our lakes, and the slow and partial operation of the causes that conspire to produce the extermination of our forests. Very possibly other and more effective measures may be devised for staying the evil complained of; but, with our earnest convictions as to the magnitude of the interests involved, we cannot omit to urge upon all a careful consideration of the matter; and should you come to agree with the conclusions reached, we cannot too strongly urge that you "bear a hand," and an earnest one, through the process indicated, or some other effective one, toward the staying of the operation of the causes which are so unfavorably affecting the climatic character of our State; and, through this, exerting so serious an influence upon the success of our agricultural and horticultural pursuits.

THE YELLOWS.

FULL TEXT OF THE ACT TO PREVENT THE SPREAD OF THE DISEASE.

Many inquiries have been made for the exact language of the law regarding the checking of the peach disease known as yellows, and we give it as found on page 726 of the Local Acts of 1875.

SECTION 1. *The People of the State of Michigan enact*, That any and all trees in the counties of Allegan, Van Buren, and Ottawa, whether peach, almond, apricot, or nectarine, infected with the contagious disease known as the yellows, shall be held to be without pecuniary value, and the fruit unfit for use as food; and that, as the best known means of preventing the spread of such disease, both tree and fruit so infected shall be subject to destruction as public nuisances.

SEC. 2. In any township of the counties of Allegan, Van Buren, and Ottawa, in which the contagious disease of the peach, almond, apricot, or nectarine tree, known as the yellows, is believed to exist, or in which danger may be apprehended of its spread or its introduction, it shall be competent for any five or more residents of the same or adjoining township to make allegation of such belief or apprehension, in writing, addressed to the township board of such township, and requesting them to take measures, as hereinafter provided, to prevent the spread of such contagious disease, and for the eradication of the same, which request must be filed with the clerk of the township in which such application is made.

SEC. 3. It shall be the duty of the township clerk, on receipt of the request specified in section two of this act, to call a meeting of the township board within ten days thereafter; and upon the assembling of said board to lay such allegation and request before them; whereupon it shall be the duty of said board to appoint a discreet and suitable person as commissioner, who shall hold his office during the pleasure of such board; and to said commissioner shall be submitted any and all complaints of the existence or impending introduction of said contagious disease, arising under the provisions of this act, within such township.

SEC. 4. Complaints of the existence or impending introduction of said disease may be made by any one or more residents of the same or of an adjoining township, and must be in writing, addressed to said commissioner, and must state distinctly the premises on which such disease is alleged to exist, or the

name and residence of the owner, and the place of distribution, shipment, or exposure for sale of the fruit alleged to be so infected.

SEC. 5. It shall be the duty of such commissioner, upon the receipt of any such complaint, to proceed without any unnecessary delay to the examination of the alleged case or cases; and if he shall become satisfied of the actual existence of the yellows in standing trees, he shall affix a distinguishing mark to each tree so affected, and immediately notify the owner or occupant of the premises on which such trees shall be standing, in person, or by leaving a written notification at his usual place of residence, requiring him, within five days from the date of such notice, to uproot and effectually destroy, by fire or otherwise, the trees so designated; and in the case of affected fruit introduced into the township, or distributed, shipped, or offered for sale therein, he shall in the same manner notify the owner or the person in charge thereof to withhold the same from distribution, shipment, or sale; and to destroy the same within the above named period of five days from the date of such notice.

SEC. 6. In case the trees decided to be so infected shall be upon non-resident lands, it shall be the duty of the commissioner to give the required notice, by posting a copy of the same at some conspicuous place upon said non-resident premises, and by serving a copy of the same upon any resident of the township or vicinity who may be in charge of such premises, and by also directing a copy of such notice, by mail, to the owner of said premises, if his name and residence shall be known.

SEC. 7. Whenever the person or persons who shall have been served with the notice or notices provided in sections five and six of this act, shall refuse or neglect to comply with the requirements of the same, within the period therein prescribed, it shall be the duty of said commissioners to immediately enter upon the premises and effectually uproot and destroy such affected or diseased trees or fruit.

SEC. 8. Any owner or occupant of premises, on which such condemned trees or fruit shall be, who shall consider himself aggrieved by the decision of the commissioner, may, within three days from the date of this notice served upon him, by a written notification, inform said commissioner of his purpose to contest the decision as to the diseased or infected character of such trees or fruit; whereupon, it shall be the duty of such commissioner, forthwith to notify the members of the township board to assemble on the premises on which such trees or fruit shall be, on the day on which the aforesaid notice requiring the destruction of such trees will expire; then and there to examine the trees or fruit in question, and to hear such evidence as shall be presented, bearing upon the question at issue; and if said township board, or a majority thereof, shall, after a proper hearing of the case, decide that said trees are so affected or diseased, they shall direct said commissioner, without unnecessary delay, to uproot and destroy the trees in question, or to destroy the fruit, as the case may be, unless the owner or occupant shall forthwith proceed to do so.

SEC. 9. In any case in which an owner or occupant of premises, or a person in charge thereof, shall be notified by a commissioner of the diseased or infectious character of any trees or fruit thereon, whether grown thereon or imported; and in which such owner, occupant, or person in charge shall refuse or neglect, in compliance with such notice, after its confirmation by the township board, to destroy such trees or fruit, the expenses of the commissioner, in effecting such destruction, including the cost of the assembling of the township board, and of the evidence necessarily produced in the case, shall be a charge: firstly, upon

the defendant in the case; or, secondly, upon the premises upon which such trees or fruit shall be grown.

SEC. 10. Any owner, occupant, or person in charge of premises or fruit, who shall refuse or neglect to comply with the order of the commissioner, for the destruction of diseased or affected trees or fruit, upon the confirmation of such order by the township board, as provided in this act, shall be liable to a fine, to be imposed at the discretion of such township board, not exceeding one hundred dollars with costs, to include those of the commissioner and the township board; the same to be certified to the supervisor of the township, and by him collected in an action of assumpsit, before any justice of the peace having jurisdiction of the case; or, upon the order of said board, to be included in the next annual tax list, and collected as a tax upon the premises upon which such trees or fruit shall be grown.

SEC. 11. The proceeds of all fines, accruing under the provisions of this act, shall be paid into the treasury of the township, to the credit of the general fund; and the commissioner and members of the township board shall, for services rendered under the provisions of this act, be allowed the same rate per diem that is by law allowed for ordinary sessions of said board, which shall be paid from said general fund.

SEC. 12. This act shall take immediate effect.

Approved May 1, 1875.

MUTUAL BENEFITS OF INSECTS AND PLANTS.

A LECTURE DELIVERED BEFORE THE STATE BEE CONVENTION AT LANSING.

BY PROF. W. J. BEAL.

The mutual benefits of insects and plants are wonderful, varied and manifold. With some plants, like Indian corn, pines and spruces, the wind is the prominent agent in distributing the pollen. To atone for this imperfect method and the great waste likely to follow, nature secretes a profusion of the fertilizing dust. In the case of the trumpet-creeper and many tropical plants, the humming bird often transfers pollen from flower to flower. In some instances snails do a similar work; in others, water, as in the case of our eel-grass. In many cases flies, butterflies, moths, beetles, and bugs are very efficient in the same good work. Hornets, wasps, bumble-bees, and especially honey-bees, are also frequent visitors to the flowers of plants for the purpose of collecting the pollen and nectar for themselves and for their young. Of all insects, the hive bees and their allies show the most intelligence in their behavior towards plants.

The flowers of our willows and poplars are of two kinds,—male and female. The flowers are on distinct trees which are often separated by considerable distances. In some cases the pollen may be transferred by the wind, but in most cases it is undoubtedly carried by the bees, which are very active while the flowers are fresh in early spring. The flowers of all our melons, pumpkins, squashes, cucumbers, and gourds are of two kinds on different portions of the same plant. The flowers are each furnished with a long or rather deep corolla in many cases, and the plants often lie flat on the ground where the leaves cover the flowers from the action of the wind. Bees and other insects are the necessary agents in crossing the flowers, and to them we are indebted as one of the links in the chain which affords all our gourd-like fruits. In nature there are many other examples of plants in which the two kinds of flowers are separate, as in oak, chestnut, beech, hazel, walnut, hickory, and many more. But how is it with most of our flowers which are perfect, *i. e.* those having both stamens and pistils? I should have mentioned that notwithstanding the stamens and pistils are near each other on trees of the chestnut, and the pistils are evidently

abundantly dusted with pollen, yet no fruit sets unless two trees are somewhere near each other, that the pollen of one tree may get upon the pistils of the other. In such cases the flowers of the two trees fertilize each other. The same is said to be true with one stalk of corn in a distant field.

Most of our cultivated strawberries have perfect flowers, and may be self-fertilized, at least to a great extent: but the Hovey, green prolific, and some others, have poor or abortive stamens. That they may be fruitful, it is the practice to mix the plants with the Wilson, or some other plants bearing perfect flowers. The bees carry the pollen and take the honey.

But how is it with the majority of perfect flowers which have good stamens and good pistils in the same flowers? In many of these the pollen is applied to the stigma by insects, and such flowers are rendered more fruitful by these insects than they would be if the flowers were left to themselves. This has been proved by experiment to be the case in many instances, though some flowers are no more likely to seed with the help of insects than without. Very many of our perfect flowers present or ripen the anthers a day or so before the pistils are ready. Such are the lobelias, campanulas,—most all the compositae which includes about one-ninth of all the flowering plants of this part of the country. The last order includes the sunflower, aster, golden-rod, dandelion, etc. Flowers of spilobrium or willow, herb, and clerodendron, thrust the stamens out straight when ripe, while the miniature stigma is curled back when the style straightens. The stigmas are the brides too late for the marriage of nearest relatives, for the pollen or bridegrooms have been carried off by the insect priests, and may be wedded to others not related or not very nearly related.

Prof. Riley observed a small moth especially adapted to fertilizing a yucca. She laid an egg and then sipped honey, and so repeated the operation. The plant reared her young insects. She took the honey and transferred the pollen, enabling the plant to set seeds. Insect and plant were useless each without the other. This is sometimes true of the striped cucumber-beetle. She eats the young plants, and later the pollen and honey, but she helps the plants to seed.

The flowers of martynia trumpet creeper, mimulus catalpa, bladderwort, and others have broad flat stigmas which curl apart. When touched by a bee's head in passing in, the stigmas close in a few seconds, and cover the surface which is sensitive to pollen. While taking the honey, the bees are dusted with pollen which is just in the right place to be left on the stigma when entering the next flower. In these flowers, self-fertilization is impossible unless in rare and exceptional cases. Flowers of Dutchman's-pipe, some arums, and lady's-slippers, entrap and hold as prisoners different kind of small insects which enter them. They are not prisons like Libby or Andersonville in miniature, for they treat their prisoners well, with good shelter and an abundant of food and drink of the best that nature affords. The flowers of our common flax are absolutely sterile when close fertilized by the pollen which is ready in abundance, and often falls upon the stigma of the same flower. Bees cause the flowers to get seeds by crossing with the proper pollen. Our crop of flax seed, then is benefited in yield, and in some cases entirely dependent on the aid of the little busy bee. Our common garden beans are self-fertilizing to a certain extent, but the crop is more than doubled by the aid of bees.

Most or all plants are better for a cross. This is not always so apparent at first, as it is after several generations of plants raised from self-fertilized flowers. In such cases, a cross adds increased vigor and fruitfulness. Many, very many flowers you see, are as plainly intended for cross fertilization as the beak

and talons of the eagle are intended for catching, holding, and tearing prey. Not honey bees, but little insects nearly akin, produce the galls on oak. The oak kindly receives the egg, swells up a soft a succulent house and gives the young worm an abundance of food. An insect lays an egg in the stem of a golden-rod, or in the tip of a young stem of willow. A brush in one case, a cone in the other is produced to nourish the young worm and feed and shelter it to maturity. Whether these insects repay these plants for their kind receptions I have not been able to find out. Paid or not paid, they have food enough and to spare for these interesting little creatures. With small bladders, the bladderwort is busy catching microscopic animals, and retaining them till dead, and then slowly transferring the nourishing juices to the rest of the plant. Here is cruelty even among humble plants. The queer common pitcher plant of our swamps is supplied on the inside with spines pointing downwards. This is the case with numerous others on the continent. Some of them prepare a honeyed secretion which grows more abundant until the lid or open mouth of the pitcher is reached. Insects are enticed, lured on, like a tippler in the dram shop, to the open mouth of destruction. Curiously constructed lids make the mouth dark, and help to keep the insect from escaping. Most of them cannot walk up the inside of the pitcher. They are drowned by the liquid and devoured by the carnivorous plant.

A few insects, among them a moth, is provided with sharp stiff spines on her legs which act like stilts to enable her to walk up and down among the stiff spines in the pitcher. In the pitcher plant of the southern swamps are thin translucent spots towards which the insects are attracted instead of the open mouth above, which is shaded by the overshadowing lid. This is one of nature's cunning traps. The martynia plant and others catch and suck to death with their sticky glands innumerable small insects. The Venus' fly trap of Carolina, every one knows about, and very likely they have heard of the several kinds of sun-dews which catch little flies with their glands.

Honey is secreted in different organs of the flower. Sepals, petals, stamens, pistils, and disk, each in different flowers is found to secrete nectar. By this I mean that one kind of flower secretes honey with its petals, another kind by sepals, and so on. Petals attract bees. Saunders, of Canada, cut off the petals of raspberries, and by so doing made it difficult or impossible for the bees to find the honey. Individual bees have been observed to behave differently about flowers, in some respects, from a majority of bees. Some are eccentric. They have their own peculiarities. Nageli put artificial flowers to branches, and used essential oil on some, and on others he used no oil. The odor attracted them to the flowers containing it. Aristotle, 2,000 years ago saw that hive bees worked continuously on flowers of the same species. They even do so when the flowers are not all colored alike, as in some plants in our flower gardens. By this means they economize time. They get the hang of it. They learn how better to make more rapid motions, and to make every motion count. The same as is true of people who become expert in certain parts of any trade after much practice in often repeating the same operation. In some cases, large numbers of honey bees soon learn to glean after bumble-bees, where the latter have made holes into the nectar. I have seen orioles pinching the tube of the Missouri currant or yellow currant, to get the little honey from each flower. This left a small hole which the bees were not slow to find, and frequently use as long as the flower remained fresh.

We have thus seen some of the diverse contrivances by which plants are

made to secure cross fertilization. The list might be almost indefinitely extended, and yet find something different in nearly all of them. Flowers shut up, go to sleep, bend over in all manner of ways to prevent themselves from wind and weather, to retain the essential parts in a fresh condition until the time when the proper insects are likely to be about. If they are intended for the visits of moths, they open when the moths are likely to fly, and do not waste their sweetness in daylight. If, like the dandelion, they are dependent to any degree upon bees and other day insects, there is no need of their remaining wide awake all night. They had better close up as they do, and keep for the best part of several days. So you see, the honey is placed in the flower as wages to pay the bees for serving the plants. The colors and odors are advertisements to call the attention of insects to the rich supplies of food in store for them. It may be said that the honey is there for the bees, but *primarily* it is there for the good of the plant, *secondarily* for the good of the insect.

BEACH SAND AS A MULCH.

BY HENRY S. CLUBB.

In a brief article in the *Michigan Farmer*, I alluded to the above subject. It is evidently attracting attention from the number of papers that have copied and made extracts from that article. At the request of the Secretary, who is compiling the present volume of the State Pomological Report, I present in this article a more comprehensive view of the subject, embodying the features of that article and such additional remarks as make it more appropriate for the proceedings of the State Pomological Society.

In former volumes of the Pomological Report I have had occasion to defend the east shore of Lake Michigan from the remarks made against it by writers not thoroughly posted in regard to its topography. The very fact of which complaint is made, that the sand of the lake shore is drifting inland, although much less extensive than asserted by uninformed writers, is one of especial interest as furnishing tree-culturists with experience in the use of sand as a mulch without going to the expense of making experiments. Wherever trees growing in the black sandy loam of our lake shore become mulched with the sand drifting around them, they are kept moist during the hottest seasons, and continue their growth without interruption from drouth the whole summer. The reason is obvious. The sand acts as a mulch: the roots are kept moist and the growth of the trees, even during a dry season, is rapid.

The capillary attraction of sand is well known, and its wonderful retention of moisture is very remarkable. In the hottest season of the year, moist sand can be reached within two or three inches of the surface high up on our lake shore sand hills. The thrifty character of the maple shade trees in lake shore cities and villages, where the grading of streets or the drifting of the winds have mulched the trees with sand, can be seen any day, and is a common subject of remark by visitors; and where fruit trees, from any cause, are mulched with sand, they never suffer from drouth. The use of sand as a mulch for cranberries has long been known. It is not merely to keep down the growth of weeds that it is used, but because the sand is a protection to the tender roots of the cranberry, keeping them moist during the dry period of the summer.

The experience of the lake shore in Michigan is borne out by the experience of fruit growers in California. The Santa Barbara Press, edited by Mr. J. A. Johnson, whose efforts to promote forest culture has been recognized by the U. S. Agricultural Department at Washington, says: "In a country like Southern California, the best method of securing the growth of trees and vines at the

least expense and with perfect safety to health is a matter of great importance. The common method in the counties of Los Angeles, San Bernardino and San Diego, is to resort to irrigation. A little water applied artificially may be necessary in some districts, but the too free use of water for irrigation is not only expensive but also decidedly unhealthful as irrigation is now practiced in this country. A far better method is the free use of sand as mulch, and then a moderate use of water where the soil and climate are excessively dry. Some years since, after a thorough practical test, we recommended ordinary beach sand as the best kind of mulch for trees, shrubs, and vines. After noting all experiments made with other materials, and the common use of a sprinkler, without applying a mulch, we are fully persuaded that there is no method for retaining the moisture in the earth about the roots of trees and vines which at all approaches the use of common beach sand. It costs little; it lasts forever; it is not in the way when the rain falls; it is not unsightly; it is cleaner than the soil itself; it saves all the water put around the tree, and is the best known agent in storing moisture by capillary attraction. It commends itself to every one who wishes to secure a vigorous and healthy growth, without care and expense, of every kind of trees and vines. If our farmers and fruit-raisers generally would employ sand as mulch, the benefit to the country could not well be over-estimated."

The San Luis Obispo Tribune, in commenting on the remarks of Mr. Johnson, says: "That sand does possess the merits claimed for it in the above article, we have no doubt, and upon our recommendation, Geo. W. Mauk, Esq., applied it in large quantities around his lemon, orange, and other choice ornamental trees and shrubs in his grounds. Upon frequent examinations, we have found the soil to retain moisture better than with any other mulch, and besides, it attracts and concentrates the sun's rays, thus imparting a degree of heat that stimulates the growth beyond the natural capabilities of the soil. It does more than this, even, the garnered heat slowly escapes during the cool hours of the night, thereby preventing frosts. These are qualities that should induce a liberal use of sand when accessible."

The value of sand for mulch, as compared with long, coarse manure, or partially rotted straw or chips, will be seen by contrast:

1. Where sand is abundant it is very cheap, only costing transportation.
2. It is clean, and prevents rather than encourages the growth of surface weeds.
3. It is not a protection or harbor to insect, as ordinary mulches are.
4. Consequently it is not liable to be disturbed by poultry, as chips or barnyard manure is.
5. It is a permanent mulch, and will require but little attention besides an occasional raking after a crust has been formed by sunshine following immediately after a shower.

There are other uses besides mulching in which clean sand is valuable to the horticulturist. Knox uses it extensively, and recommends it very highly in strawberry culture. Its use in propagating houses is well known to practical men.

It is not necessary to go to the lake or seashore in order to obtain pure beach sand. The subsoil for five or six miles east of the present beach of Lake Michigan is composed of beach sand having in the ages of the past evidently been washed by the restless waves of the great lake,—waves that continue to recede as they throw up sand banks and bars that in time bid defiance to their encroachments.

The importance of this subject, especially to fruit growers and foresters along the sandy portion of Michigan shores, will be readily seen. What is frequently regarded as a chief objection to the lake shore region becomes, when intelligently applied, one of its chief excellencies. Many are the seasons when the clay lands ten to twenty miles from the lake are scorched with drouth, while the sandy region near the lake is verdant and moist and scarcely affected by the same weather which parches up and cracks the heavy soil. We have seen one hundred pound squash grown where sand has been used as mulch, when without such treatment a few miles inland the season has dried up the vines and no crop obtained.

In the twenty-first annual report of the Massachusetts State Board of Agriculture for 1873-4, Dr. Loring is reported as saying: "I represent a clay-farm. Almost all the land I cultivate is of that character. When I took it into my hands in 1857, it had been mucked to death; it had been filled with muck. * * * * Having accidentally discovered a large deposit of sand in the rear of my stable, I resorted to that sand for bedding for my cattle and the enlargement of my manure heaps. The land changed materially in three years. The quality of my crops changed,—half grown, stunted mangold-wurzels were replaced by large, healthy looking roots. Tufted grasses,—that is, fields where there would be a square foot of grass and six inches of intervening barrenness, were all wiped out, and an equal diffusion of healthy, thrifty grass was secured in its stead. It was owing to the introduction of sand with the manure into those lands which had been rendered sour and pasty by the muck. That was the result of that experiment. So I say, if you have clay lands, extend your manure heaps and compost them by the use of sand." This use of sand in evening the growth of sod and promoting a fine growth of grass is completely verified on the sandy portions of the lake shore. No finer or evenier sod can be found than that which forms naturally wherever the sand is protected from the strong winds and where it thinly spreads over the richer soil. It frequently happens in grading roads that sand is used to raise the road to a proper grade. The grass which soon makes its way to the surface is as fine as hair, but it soon forms a sod which is invaluable for lawns, and is extensively used by gardeners for that purpose. White clover is frequently raised in the same apparently spontaneous manner, and is green the season through. In fact, sod mulched with sand seldom dies, even in the hottest weather.

The value of beach sand in cranberry culture is referred to by Mr. S. B. Phinney of Barnstable, Massachusetts, in his valuable article in the Report of the Department of Agriculture, 1863, page 134. "The depth of sand required to be spread on the surface depends upon the depth of the peat. If this latter is only a foot or two in thickness, five inches of sand is considered sufficient; if it is several feet, at least a foot of sand is required to make a good bog. The more sand there is used the longer it requires to bring the vines into a bearing state; but when brought into that state they continue for many years. At Sandy Neck on the north side of Barnstable harbor, the cranberry has grown in natural bogs for hundreds of years. The soil of these bogs is beach sand, with a mixture of peaty and vegetable matter. They prove that a large admixture of peat or mud is not essential to the growth of productive vines. * *

At Provincetown, where the soil is very similar to that at Sandy Neck, in the swamps, where the mud is deep, the cultivators are troubled with wild grasses and rushes, and for that reason sandy bottoms are preferred. It is also found by numerous experiments that very little peat is absolutely essential to secure a

crop. The best and most productive vines are usually found on the edges of the bogs where the sand was removed to the depth of several feet in grading. In such situations there is no peat or mud, but the water contains sufficient material, in solution, to promote the growth of the plants. In such situations guano and other fertilizers have a good effect." The descriptions here given of the natural cranberry marshes of Massachusetts, would apply equally to those of the eastern shore of Lake Michigan where the bogs are surrounded by ridges of sand thrown up by the action of the wind and the waves. They are located very conveniently for spreading over the bogs and marshes rendering them exactly adapted for the production of the cranberry.

We have thus brought together the experience of fruit-growers and foresters in the extreme west, the extreme east and of the intermediate point in which Michigan is more immediately interested, and it all tells the same story, proving that although beach sand is one of those common blessings within our reach, which are apt to be overlooked on account of their cheapness and the ease with which they may be obtained, an intelligent appreciation of its value and proper application produce the most beneficial results in increasing the fertility and productiveness of the soil and the thrifty growth of trees and vines that would otherwise suffer from drouth.

THE SECRETARY'S PORTFOLIO.

THE SECRETARY'S PORTFOLIO.

[NOTE.—The following selections are from the current thought upon horticultural topics during the year, as expressed in discussions at fruit conventions, talks by the wayside, and notes in our leading horticultural papers; they are gathered here in a place of safe keeping, where they may be easily referred to and used.]

WHAT SHALL WE DO?

In almost every orchard as you pass through the country you will see more or less apple trees that are either dead or dying. The percentage of loss last winter, notwithstanding its mildness, was greater, I think, in this section than that of any previous winter. This is a fearful fact for orchardists to ruminate over, and the difficulty seems to have a wide range in the State of Michigan. Mr. Sessions, our Lieutenant Governor elect, informed me early in the season that he had a very promising and valuable orchard in the Grand River Valley, near Ionia, nearly ruined within the last three years by this mysterious blight. In all parts of the State that I have visited, many of the larger trees show unmistakable signs of writhing in the grasp of the destroyer, and in this vicinity some of the young orchards have fared even worse than the older ones, so that we can hardly hope to replace the dying trees by new settings, as some have proposed to do.

It is very evident that if some remedy is not found, Michigan apples will soon be too scarce to sell for \$1 per barrel. J. Webster Childs at the Farmers' Institute at Rochester last winter, gave as his theory that this blight was caused by the sudden thawing of the sap in the bark of the tree after a severe freeze, caused by the coming out of the sun so that its warm rays strike the exposed bodies of the highly trimmed trees. In this theory Mr. John Thomas, of Thomas, a very extensive and successful orchardist, fully agreed.

The remedy, or rather preventive, proposed by these gentlemen was to let the limbs grow close to the ground, so as to protect the trunk of the tree from the direct heat of the sun. While this may be entirely effective in raising a young orchard, it affords no consolation for those having old and valuable trees which they wish to save.

In talking over this matter to-day with Isaac Parker, of Hadley, Lapeer county, Michigan, a successful fruit culturist, he denies the correctness of Mr. Childs' theory. He says that in an orchard recently bought by him, in which the trees had been neglected, and the branches were so low as to completely protect the trunk, the death rate was fully equal to those orchards in the neighborhood that had been pruned in the usual manner. Mr. Parker claims that a

sure remedy with him has been the piling of fresh dirt around the tree in the fall, about one foot high and six to ten inches in thickness, outside of which he covers with manure, to protect the roots from freezing so hard. His theory is that the freezing of the exposed roots is what ails the trees; that the whirling of the wind takes the snow from around the body at the top of the ground when the bark is tender, and the hard freezing of the winter then causes the death of the tree. He says the fresh dirt will answer the same purpose as manure in protecting from freezing, while it obviates the danger from mice. This can easily be tried, and as Mr. Childs' remedy can not with our old orchards, I shall try this the present fall.

C. K. CARPENTER.

HOW TO MAKE ORCHARDS BEAR.

Just now, as our orchards in this part of the State are bursting into bloom, and give us the reasonable assurance of a fruit crop equal to that of 1872, it is an interesting matter to consider if we cannot prevent a return of the steady barrenness of the last three years. It has been my impression that it could be done by cultivation and the use of special fertilizers, and I have said as much on several occasions, in this correspondence. I have recommended breaking up the surface of the orchard when in grass, and where the trees are not too large, cultivation in hoed crops, and the use of the salts of potash in the form of wood ashes and otherwise. And now comes Mr. John I. Carter, superintendent of the experimental farm in Chester, Pa., and relates an experience which justifies the soundness of my recommendations. He says that "to secure healthy trees and good crops of fruit, not only requires that the ground should be in good mechanical condition, but a plentiful supply of available food of such variety as meets all the requirements of wood and fruit growth. In order to insure a crop of wheat on old lands, something more than barn-yard manure is necessary. We must use mineral fertilizers in order to supply those of which the soil has been exhausted, or render those present in it more available. So it is," continues he, "in growing healthy trees or making perfect fruit. We must insure them an abundant supply of mineral fertilizers. I think this was demonstrated in our orchards last season. We had more fruit than we ever had before; indeed the finest I ever saw. Our orchards have been rather unthrifty, but since we have used mineral fertilizers on hoed crops, they have greatly improved.

"We pruned lightly only in winter, cutting out water sprouts and dead wood, and washed or painted the trunks and the lower limbs with a composition made as follows: Commercial potash and cow manure each half a bushel, sulphur five pounds, dissolved and mixed in a 40-gallon barrel of water. Previous to this, and during the winter, a light coating of barnyard manure had been applied. In the spring the ground was carefully plowed and planted in potatoes, giving them a good dressing of acidulated South Carolina rock (soluble phosphate of lime). Then, under each tree, we sprinkled five pounds of the muriate of potash. It costs about 2½ cents per pound, and analyzes 45 per cent. of potassium. As the ground contained plenty of lime, we thought we had prescribed the most needed materials for perfecting fruit and making healthy wood growth, and the result fulfilled our expectations."

So much for Mr. Carter's experience. As for my own, I find the trees which last spring were treated with ashes and potash, are about to bloom in a very promising way; and the bloom is not of the kind that wholly possesses the tree and suggests sickness or decay, but that healthy distribution over all portions of all the trees which warrant fruit growth and maturity. I cannot say it is the potash and the working of the soil that has brought about the change, because the trees have been barren since 1872; but if, after farther applying potash in the form of ashes and the muriate, and to that I add a liberal sprinkling of superphosphate of lime, to the extent of twenty pounds to the tree of a foot diameter, this spring and summer, I not only get a good crop this year but a fair crop next, I shall attribute the improvement to the application of mineral fertilizers, and I shall regard it as pretty conclusively proved that why our orchards fail to be thrifty, and continue for several years in succession barren of fruit, is due to the fact that potash and phosphoric acid and their compounds having been exhausted from the soil, they must be restored to it before we can count on annual crops.

Knowing and gratefully acknowledging the extent to which horticultural and agricultural progress and improvement are due to the patriotism, liberality and good sense of gentlemen and city amateur farmers and gardeners, who are able and willing to take money risks in experiments of this kind, I respectfully suggest to those east and west, who have apples and other sour fruit trees that persistently refuse to bear, that they try the salts of potash and the phosphates of lime in the way and manner suggested and explained above.

British agriculturists have for a long time been sensible that even with the advantages of their system of husbandry, which returns as far as possible to the soil every substance taken therefrom, it is rapidly becoming exhausted of nitrogen and phosphoric acid and their compounds, and they have, with characteristic foresight, and the aid of an enlightened government, secured a practical monopoly of the known guano deposits of the world.—*B. F. J. in Country Gentleman.*

BUY OF RESPONSIBLE MEN.

"I think the Iona grape is a failure," said a friend to me the other day.

"Why," I answered, "as a grape for the table nothing can surpass it."

"Well, I bought two vines four years ago of a man who sold trees and vines about here, and for two years they have borne grapes. I ordered the Iona because it was cracked up as something extra, but I find it a poor thing and very sour."

"Are you sure you have the Iona," I remarked.

"Yes, for the man warranted his stuff here to name."

"Who was he?"

"I don't remember his name. He was not a resident here, but seemed like a fine fellow."

"Let me see your vine. I am anxious to see if you really have the Iona, and what color is the grape?"

I went and saw the vine, and was told that the grape was a small, black variety, growing thick in the bunch, and was quite prolific.

There was no question in the matter; my friend had been swindled by an irresponsible tree agent who had pawned off some Clinton vines for Ionas.

The same story is repeated to me so often that I have it by heart. Why will not men learn to purchase their nursery stock of men who have a position in business, and whose reputation is a part of their capital stock?

The only way to be reasonably sure of what you buy is to send direct to some reliable nurseryman and tell him what you want.

The average nurserymen I have found to be honest, straightforward men, while the average tree peddler has a reputation that is far from being unsullied.

C. W. G.

TRANSPLANTING YOUNG APPLE TREES.

The chairman, on introducing this topic, remarked that as the period for planting trees is drawing near, this subject will be as appropriate as any other for the club to discuss.

Mr. Brown said that the rule that the roots will be found as far from the base of the trunk as the entire height of the tree, after many examinations, has invariably been found within bounds.

Mr. Wheat referred to Professor Beal, of the Michigan Agricultural College, who showed last year an orchard on the college grounds with trees from twelve to fourteen feet high, whose roots extended a distance of twenty-seven feet. A part of the orchard had been plowed over the whole surface after it had remained a great many years in grass. The result was a very great increase in the vigor of the trees. Another portion was plowed, with the exception of grass circles ten feet in diameter, left at the base of the trunks. There was no apparent difference in the vigor of the trees where the whole surface was plowed and where the ten-foot circles were left in grass.

Mr. Thomas believed that the true and scientific management of fruit trees of any sort will depend largely on the supply of food to the roots, and to understand the best method of applying this food it is necessary to know the extent, depth and character of the roots; otherwise, it is like attempting to feed an animal in the dark. The food may be all placed where it is inaccessible.

Mr. Carpenter thought, where the subsoil is hard and poor, and nearly all the fertility of the land lies within a few inches of the top, the treatment must be very different from that employed on a deep, rich soil. On such a shallow soil the trees are much more susceptible of the influence of surface-culture or top-dressing with manure. The roots extending very near the surface, it becomes more important to cultivate shallow. It often happens that a top-dressing of manure on such land is the very best thing for the trees; to allow a dense growth of grass without the manure may be the worst treatment for their growth and success.

Mr. Brewer, who had observed that it had been advised that on shallow soils manure may be the most effective, thought even then a shallow and thorough cultivation may answer all the desired purposes. The addition of a moderate top dressing to such a cultivated soil will accomplish more than heavy manuring on a sod. The question will resolve itself into one of economy. An equal

effect produced by manure would require at least fifteen two-horse loads. At \$1 per load, and half as much more for drawing and spreading, these would amount to more than four times as much as keeping the ground clean by cultivation.

Mr. Henderson believed it is generally admitted throughout the Northern and Eastern States, and in many portions of the Middle States, that very few orchards will possess sufficient vigor unless cultivation or top-dressing is given to the soil. As a general rule for guidance in determining what treatment to adopt, the annual shoots may be examined, and if in young orchards they are less than two feet in length, or in bearing orchards much less than one foot in length, they should receive additional stimulus by manure or cultivation.

The general opinion was that our farmers have plenty of time to set out in the fall and set well, while early in the spring they are pressed for time and are liable to neglect the necessary precautions. Trees set out in the fall will, for the most part, if properly done, thrive as well or better than those put out in the spring.—*N. Y. Farmers' Club.*

THE NEW ORCHARD AT MICHIGAN AGRICULTURAL COLLEGE.

We are located in a place subject to great extremes of heat and cold, the thermometer reaching 32° and 33° below zero.

In spring we have late frosts, in autumn early frosts, in summer severe droughts. Fruit trees of some sorts, as Sweet Bough and Baldwin, have been struck dead, or have lingered a useless, hopeless life for a few years after the severe winters. Beautiful, valuable trees are sadly missed. It has taken a little time for us to regain courage and decide what it is best to do,—give up entirely or try again. Within twenty years much has been learned in regard to hardy sorts, and the best sites for orchards. Last spring, after a mild winter, I ordered trees a year old, of pears, plums, and cherries. Some of them were two years old, but all sound and thrifty. They were selected in about the following proportions: Of pears, 5 Belle Lucrative, 5 Seckel, 5 Beurré d'Anjou, 5 Beurré Bosc, 5 Bartlett, 5 Sheldon, 5 Howell, 5 Buffum, 5 Louise Bonne de Jersey, 5 Flemish Beauty, 5 Clapp's Favorite. Of plums, 7 Wild Goose, 7 Smith's Orleans, 7 Jefferson, 7 Washington, 7 Lombard. Of Cherries, 10 English Morello, 10 May Duke, 15 Reine Hortense, 2 Yellow Spanish, 10 Belle de Choisy, 10 Governor Wood, 3 Black Eagle, 10 Elton, 17 Early Richmond. These were not for the purpose of raising fruit for market. The young trees were well set in nursery rows. Nearly all have made a good growth this season. The small trees were cheapest, most likely to live, transported with less risk, and contained more roots in proportion to the rest of the tree. We had an old pasture, part of which was a strong clay plateau, twenty to thirty feet above the surrounding land, with no screens of any kind. A year ago this fall it was broken up. This season it has been worked over, while it is now in excellent condition, very mellow, and rich enough. It was subsoiled. This fall it has been scraped and smoothed down in all sudden irregularities. It was staked off according to the mode described by Thomas, the pears and cherries twenty by twenty feet, the plums twelve by twenty.

A few at a time of the young trees were carefully dug and set on the hill. Last spring they were small and had a fair lot of good roots; this fall they lose no roots in moving, and we find many in addition. The holes are dug and surface soil thrown in about the roots of the trees. The soil is moist enough. The roots are well placed and the soil well tread in about them. The trees are all set with the graft or bud scar to the northeast, and the trees all lean to the southwest. They will all be banked up a little. In a book a plat has been made registering the name and position of each tree. So far, I feel that we have done our part well, setting the trees on the most suitable spot on the farm. If they die next year it will not be our fault. I intend they shall be cultivated with little or no manure, perhaps raising some beans or potatoes for a few years. I want them to grow rather slowly, and may let the grass work in a little after a few years; this will depend on the growth and appearance of the trees.

W. J. BEAL.

IMPORTANCE OF THICK LEAVES.

The important functions that leaves perform, not only in the growth of the plant, but the ripening of its fruit, make it a matter of vital importance that the leaves remain whole and healthy during the time wood and fruit are maturing. Here we meet one of the difficulties of American horticulture. A large part of our plants under cultivation are European species and varieties, or their immediate descendants, selected and grown under certain conditions, meteorologic and otherwise, that render a new trial and selection necessary in America. Hence we are going through anew the process of selection, based on the changed atmospheric and climatic conditions of our peculiar climate.

One of the points most needful to notice in selection is the adaptation of the leaves to our trying climate. Here we have excessive changes, from heat to cold and from cold to heat. We have long continued rains and protracted drouths. We have insects that multiply excessively, and fungoid growths that spread with marvelous rapidity. All these are trying to plant life, and first after the blossoms then to the leaves. If the leaves are small and thin and smooth, they are apt to perish or become diseased, and the fruit, and ultimately the plant, perish. Year by year we find varieties of fruit, otherwise desirable, have to be given up because of their inability to grow leaves that will endure the atmospheric changes, or the insect attacks of our climate.

Among our apples we have a notable instance of that very popular variety, the Winesap, whose leaves, in many years and situations, fail to produce a good growth of wood or fruit. The Pryor's Red seems to be gradually succumbing for a similar reason in Kentucky and Indiana, and the evil will probably spread as soils become more exhausted. A large proportion of the European apples we have in orchards show by their small and scanty foliage premonitory symptoms of failure. On the other hand, we find that the Russian varieties and the Siberian crabs are now gaining in favor, and notably hardy and vigorous in leaf, with the possible exception of the Tetofski, whose leaf is large but warningly thin.

This subject has received full attention in the case of the grape, whose leaves have been more looked to than those of any other fruit. The Concord's suc-

cess may be said to be specially due to its large, coarse leaves, which endure all climates and seasons through a wide range of country. The failure of a large number of grapes of excellent quality may be laid to the lack of a leaf with the health and vigor of the Concord. In the case of the peach it was early found that many sorts deemed of high value in European climates would hardly answer here at all, especially the serrate varieties, which our cultivators, notably in the Mississippi valley, are generally forced to discard.

We might extend this article by multiplying instances, but we will resist the temptation. What we desire to do, and if we have done that we have done enough for the present, is to call the more general attention of our readers to the importance of thick leaves. Seek varieties that have strong leaves, and strengthen weak-leaved varieties by manuring and high culture, which, judiciously applied, strengthens and fortifies foliage against weather changes and insect attacks.—*Rural New Yorker*.

WHAT VARIETIES OF FRUIT TREES TO PURCHASE.

Tree agents are assiduously plying their vocation over the country, and the question comes to every purchaser, "What trees shall I buy?" Our first advice is to trust the judgment of no soft-spoken agent who claims to know just exactly the trees you are dying to plant out; and again do not buy at all until you have carefully canvassed the matter, for the planting and care of an orchard are not the matter of a year, but the mistakes of the outset, are to be felt for a generation or more.

Apples, for instance, that were standard varieties a few years ago are discarded now because not sufficiently hardy for our climate. In fact, the first consideration in the selection of sorts is hardiness. No matter how good a fruit may be, if it is not adapted to our climate and conditions it is worthless. In this matter we can receive little or no assistance from the lists prepared never so carefully in other States. The advice of old fruit-growers in our own State is worth a great deal in making a decision as to what is hardy. Again, a matter not often thought of is the succession of fruit for the family. This, when the family depends largely upon the orchard for a good part of the living, is a leading consideration, because if apples are desirable at all, they are good to have continuously when wanted. Then it is important to possess the earliest ripening variety that grows in the State, and follow it with those that mature successively until winter fruit comes into use, then to possess those winter sorts that will supplement each other and carry the apple season around almost to apples of the next year. In the choice of other fruits than the apple the same principle is involved. In these we can not make them go the year around in their fresh state, but we wish to lengthen the season to its utmost limits. When the quality of the fruit, and tendency to bear well is added to the items already mentioned, there is a good basis upon which to found a decision.

C. W. G.

THE SCIENCE OF APPLE EATING.

The boy is indeed the true apple eater, and is not to be questioned how he came by the fruit with which his pockets are filled. It belongs to him, and he may steal it if it can not be had in any other way. His own juicy flesh craves the juicy flesh of the apple. Sap draws sap. His fruit eating has little reference to the state of his appetite. Whether he be full of meat or empty of meat he wants the apple just the same. Before meal or after meal, it never comes amiss. The farm boy munches apples all day long. He has nests of them in the hay-mow, mellowing, to which he makes frequent visits. Sometimes old Brindle, having access through the open door, smells them out and makes short work of them.

The apple is indeed the fruit of youth. As we grow old we crave apples less. It is an ominous sign. When you are ashamed to be seen eating them on the street; when you can carry them in your pocket and your hand not constantly find its way to them; when your neighbor has apples and you have none, and you make no nocturnal visits to his orchard; when your lunch basket is without them, and you can pass a winter's night by the fireside with no thought of the fruit at your elbow, then be assured you are no longer a boy, either in heart or years.

The genuine apple-eater comforts himself with an apple in its season as others with a pipe or cigar. When he has nothing else to do, or is bored, he eats an apple. While he is waiting for the train he eats an apple, sometimes several of them. When he takes a walk he arms himself with apples. His traveling-bag is full of apples. He offers an apple to his companion, and takes one himself. They are his chief solace when on the road. He sows their seed all along the route. He tosses the core from the car window and from the top of the stage-coach. He would, in time, make the land one vast orchard. He dispenses with a knife. He prefers that his teeth shall have the first taste. Then he knows the best flavor is immediately beneath the skin, and that in a pared apple this is lost. If you will stew the apple, he says, instead of baking it, by all means leave the skin on. It improves the color, and vastly heightens the flavor of the dish.—*John Burroughs, in Winter Sunshine.*

THE NORTHERN SPY.

This variety has been in some dispute among farmers on account of the delay of young trees in coming into bearing. It is found, however, that when fully established it is a constant bearer, and each alternate year bears a full crop. It needs a hot summer to bring out its best points in color and maturity, and our present season seems just adapted to it. The crop is unusually fair and large this year, and is already beginning to color considerably. The Spy is usually one of the latest varieties to ripen, and is also disposed to overbear in the years when it is full. The thinning out should be in the centre of the tree, and should also include vigorous pruning of the center, as its upright habit and strong growth are apt to leave too large a mass of foliage. These peculi-

arities are also one cause of its delay in coming into bearing. By encouraging the growth of lateral branches and pruning the centre, fruitfulness is induced, and the apples not being shaded will be of better color and higher quality. A farmer of much experience informs me that he has brought his Spy apples into bearing as early as any variety by plowing the orchard each way in the months of July and August. The severe pruning of the roots, which this secured, checked the superfluous vigor of the tree and turned its vitality to producing fruit instead of "nothing but leaves." Perhaps pomological authorities would object to this treatment of vigorous trees; but where men have watched young orchards of Spys for ten, twelve or more years without any return for their outlay, they are justified in using desperate measures. For grafting old trees over, this vigor of the Northern Spy is just what is wanted. A few grafts properly distributed on an old tree will make a large head after a very few years, and will begin to bear in two or three years after setting. The only serious fault of the Spy is the black fungous growth, which sometimes appears on its fruit, and which is much worse when grown on light or sandy soil. I infer that low or rich flat ground is much the best for growing this variety of the best quality and with the greatest profit.—*W. J. F. in Country Gentlemen.*

ACCIDENTAL PRUNING.

An old New-Englander once remarked to us when we advised him to pinch back his blackberry bushes, to keep them within bounds and make them bear better, "That's so! I can remember when I lived down at Dartmouth, that we always found the most blackberries on the bushes that the old cow had browsed down." We lately saw another example in a western paper, where a farmer had set out a hundred apple trees in autumn, and was advised to cut the shoots back, to counterbalance the necessary cutting of the roots in taking them up. But he declined. In the winter a cow broke in and cropped the tops of twenty-five or thirty, and the winter being severe, these and a few others were the only trees which survived. The others had more top than they could carry, and whipping about in the wind they did not grow. We would not, however, recommend the cow-pruning for general adoption.

J. J. THOMAS.

APPLE ORCHARD PROTECTION.

The large number of injured trees in the State as well as the constantly increasing testimony as regards the continuance of the causes which kill fruit trees, is awakening considerable attention among our orchardists. The truth is, ever since the extraordinary winter of 1872-73 apple trees have been dying, and it has required but little addition to the disease then engendered to kill off large numbers of trees that came through that scathing winter with

impaired vitality. In our opinion the primary cause of this tree-killing lies with that severe winter and the one that followed two years after. We have lost largely in fruit trees and have been stimulated to a good deal of inquiry and research, and find there are full as many trees diseased and dying by inches up in the limbs as in the trunks.

We are satisfied that all these disastrous results are not the result of want of protection of the roots of the trees, but that with perfect root-protection many varieties only came through that uncommon severity to die by inches during the seasons which have followed.

Still we do favor strongly protection of the roots of orchard trees, and suggest that those who attempt this ascertain where the roots come nearest the surface, and protect accordingly. In small trees the root system is close to the body but in large trees the roots that need the greatest protection and come nearest to the surface are some distance from the trunk, and nothing short of an entire covering by mulching or a crop left upon the ground will suffice. We need not be discouraged in the setting of new trees, but must choose hardy sorts and care for them as well as we can; studying the cause of disease and methods of protection, thus keeping our knowledge up with the encroachments of difficulties.

C. W. G.

DO VARIETIES WEAR OUT?

As often as the fruit season comes round so does the question occur to my mind, do varieties wear out? The question is brought before me by the appearance of the fruit trees, which never fail to remind me of the theory of those people who assert that varieties, of the apple especially, are given to die out after having lived to the age allotted them by nature, and that after they have attained this age the best of cultivation will not maintain them in health and fertile condition.

I can remember this question being mooted when I was a boy carrying vegetables to the hall. I can also recollect that it attracted the notice of the gardener under whom I was serving, and I well remember the views in reference thereto that he expressed one day to the local nurseryman. From that time until now I have been much interested in what has been said or written respecting the question, and for a period of nearly thirty years I have never failed to observe the condition of those fruits which were then said to be fast dying out. I well remember that the old Chaumontel pear, the Red Streak, the Ribston Pippin, and the Golden Pippin apples were amongst the number that were prominently brought forward as likely to die out in a few years. Nevertheless, I still find these fine old fruits in as good a condition as when, as an observant lad, I had known them. Yet I am, in common with others, asked to believe that they are gradually dying out, when, for the trouble of a little seeking, I can find them all existing in the best possible health, and as fruitful as ever they were known to be. For my part I cannot see that there are any more evident signs of their wearing out than there were when I first knew them, and those who believe in it must advance some sounder arguments than they have yet done before I become a convert to their opinion. I have been at some trouble and expense to obtain

samples of fruit from the trees with which, as a boy, I was well acquainted, and as I have them before me now in the best possible condition, I am almost tempted to ask, what shall I be required to believe next? Living in a county noted for its apple orchards, I occasionally meet with men who like to be thought well informed upon such matters,—that are staunch believers in the dying out theory,—and who do not scruple to act upon their faith by discarding particular varieties of the apple from the orchards which are said to die out after a certain time. Without saying they were wrong in so doing, I challenge them to adduce evidence sufficiently conclusive to prove that they are acting rightly. The condition of many orchards in Somerset is such that I am willing to admit that a casual observer might easily be led to believe in the dying out theory, for they are in a bad condition. But it is not right that those who neglect their orchards, and loudly complain of their unproductive condition, should shelter themselves behind a theory entirely unsupported by facts.

Taking a broader view of the subject, it must be patent to those who go about the world with their eyes open, that all those varieties of the apple and pear which, thirty years ago, were said to be nearly worn out, are still to be found as productive as ever they were. At the present moment we have in the fruit-room samples of Ribston Pippin apple as fine as one could wish to see; the Golden Pippin apples, from old trees, are still as satisfactory as ever; the old Forge apple is another variety which still holds its own against all comers for productiveness. As these facts are undisputable, I cannot understand what sound arguments in favor of the wearing-out theory can be brought forward. That the varieties I have named, in common with all other varieties of the pear and apple, are to be found in an unsatisfactory condition in some places I know well. But the fact does not afford any sufficient proof that their days are numbered, but it does show that when we select these unhealthy trees for purposes of propagation we act very unwisely. There can be no doubt that when we take scions from trees full of canker, and otherwise unfit for propagation, we carry the disease on a stage farther. In other words, we propagate the disease, and blame the trees and not ourselves, and then hunt up all manner of excuses for the unsatisfactory condition of the trees.

I do not pretend to have dealt with all the points bearing upon this question, for I have not the time to do so, but I have said enough to show that if we allow our minds to be influenced by such an untenable theory as that of wearing out, we are liable to lose from cultivation valuable fruit simply because people are afraid to plant. We have only to exercise a fair amount of care in selecting the scions for propagation to carry on these fruits to the end of all time. If cultivators select grafts at random, and propagate without exercising due care, canker and premature decay of the young trees will follow as a natural consequence; but a perfectly healthy scion, united to a stock equally healthy, will make a tree that will live to a ripe old age, and supply healthy scions for propagating purposes. Unquestionably the scion inherits the qualities of the parent, either good or bad, according to the condition of the tree at the time it is taken; therefore, take scions from healthy trees, put them upon vigorous stocks, and make your mind easy as to their well-doing.—*Gardener's Magazine*.

LIQUID GRAFTING WAX.

Liquid grafting wax, which, being about the consistency of honey, can be made, which may be readily applied with a brush for outdoor grafting, without the trouble of heating. It is likewise a good application for wounds in trees, cuts made in pruning etc.: Melt together 1 pound of rosin and 1 pound of good beef tallow. Remove from the stove and let cool until a scum forms over it, then add 1 teaspoonful of spirits of turpentine; replace on the stove and add seven ounces of a mixture of 2 parts strong alcohol and 1 part water, stirring briskly and taking care that the alcohol does not inflame, as it will if the mixture is too hot. Stir until the liquid is lost in the mixture, when it should be of the consistency of honey. Keep in a closed bottle and apply with a brush. If, after a month or two, it becomes hard, remelt, add a few more drops of turpentine, and of the alcohol and water. A few days after it is applied it becomes hard, and will remain unchanged, except that it grows harder, for an indefinite time.

W. W. TRACY.

FRUIT FOR THE TABLE.

If we eat to live, the choice of food must have a good deal to do with the happiness of living. It seems to me there is altogether too much meat and pastry eaten, and fruit does not enter largely enough into the eating curriculum. The apples, peaches, pears, etc., are usually, if eaten fresh, taken in hand between meals so as to keep the stomach in continual commotion and thus do full duty.

The time of all others to eat fruit is at meal time, and the best place to put it is not between rich crusts, or sweetened and spiced out of all its original flavor, but taken free from any chemical household contrivances, and rich only with wholesome freshness, into the stomach. Ripe fruit eaten at proper times is wholesome to all—except the few who have inherited or produced by false diet, abnormal digestive organs. I would have fruit of some kind upon the table in its fresh state each meal in the day, during as much of the year as it can readily be obtained. To those who can relish a meal better with a delicate appropriateness of everything connected with the table, there is nothing that can be more pleasing than the decorative influence of dishes of rich fruit upon the table.

If, in the arrangement of the table, fruit is the desert, I would in place of two or three courses of meat and fish put one course and have several deserts. Perhaps I am not up with the times, and it is necessary now-a-days to stuff our epigastrium with all sorts of meats to the exclusion of fruits, but still it seems to me the world would be better off if it would work toward the original diet of Eden—which we are led to believe was exclusively fruits.

S. Q. LENT.

ANNUAL BEARING APPLE TREES.

The annual production of fruit is a subject of much importance, and one that interests everybody. Among fruit-growers it is well understood that many of the best varieties of apples bear every other year. To obviate this inconvenience and have their fruit every year, some persons favor the planting of a part of the apple orchard one year and finishing it the next; while others recommend planting half in the spring and the other half in the fall. What the time or manner of planting the trees have to do with their annual or biennial habits of bearing, I cannot understand. I will venture to say that the annual bearing of the apple tree is produced by its ability to make fruit buds while it is maturing a crop of fruit. If this be true, and I have no doubt that it is, the practice to be pursued is to aid it in performing all its functions every year. How is this to be done? I answer, by not allowing it to overbear. When this is the case, the tree, after it has commenced bearing, will form blossom buds every year.

There are two kinds of fruit buds, simple and compound. These buds are enclosed in thick water-proof scales, and look very much alike until the scales begin to open, when the former show but a single blossom, as is always the case in the peach; while the latter show a number of smaller buds, each having a calix and all the necessary parts of the flower to produce fruit. In the apple this compound bud, called the cyme, has five to eight blossoms, all of which were started on a minute scale the previous summer. Many of the blossoms of the cyme set their fruit, and when thinning is not done there is more fruit on the tree than it is capable of maturing, and at the same time perform the necessary functions for the next year's crop. The central blossom of the group is the first one to open, and becomes the most prominent one of the cyme. Its pistil is the principal organ of fructification, and is supplied with pollen from the other blossoms of the tree, carried to it by insects and the wind, as well as from its own anthers. It always sets its fruit unless the stigma becomes injured. If all the young fruit in the cyme could be removed after it is set, except this central one, there would be left as much as the tree could properly mature, and prepare new buds for the next year's crop. To remove all the unnecessary fruit from each cyme, would be a very difficult task, as well as a tedious one. Perhaps the more expeditious, if not the best method, is to remove all the fruit from a branch. It is the one I practice, and which has, with me, proved a success. The branch from which the fruit is removed commences making fruit buds for the next year, while the others mature the present year's crop. In this way I get apples every year from biennial bearing trees, unless the entire crop of fruit is killed by frost or other climatic influences.

Before I proceed to give directions for performing the operation, I will state that I only remove the fruit from that class of trees that bear their fruit on spurs—short stubs coming out along the branches, at the end of which is a bunch of blossoms. Among this class of varieties will be found the Astrachan, Rambo, Red Streak, Belmont, Primate, some of the Pippins and others. Nearly all the trees that bear their fruit on spurs have wide-spreading branches, thus enabling me the more readily to perform the operation.

I first prepared a double ladder, made of pine boards, and about twelve feet long. It is fastened together at the top with hinges, so that I can spread it out, or set it up straight as circumstances may require. The ladder is three feet wide at the bottom and one at the top, so that it stands very steadily and is so

light that it is easily and quickly handled by one person. As soon as the blossoms have fallen from the tree and the fruit is well set—standing out on their stems so that the entire branch can be taken off at a single clip without injury to the wood or leaves—I commence the operation of removing it. Placing the ladder under or by the side of the branch to be operated upon, I ascend the ladder, if necessary, and steadying myself by holding the branch with one hand, while with a pair of sheep shears in the other I cut off every bunch of apples; being careful to leave as much of the stem of the apple on the tree as I can conveniently. When all the fruit is removed from a branch, I skip the next one and operate on the third, and so on until I have gone over the tree. This removing of the fruit must not be confined to little branches here and there over the tree. All the fruit must be taken from a main branch, and if possible a corresponding one on the opposite side of the tree, so that the weight of fruit will bear equally on each side. The fruit left on the tree will not be so large at maturity as it would, provided a portion of each bunch had been removed. It will, however, be sufficiently improved to amply repay for the time spent in the operation, while the great advantage is that of having a portion of the tree bear fruit every year. This operation once performed need not be repeated until the fruit has been killed by frosts or other climatic influences. The removing of the fruit in this way is not so tedious a job as some suppose. If the trees are not too large—say they are from twelve to twenty years old—a smart, active man can go over fifteen to twenty trees in a day. In 1863 I operated in this manner on some Rambo trees, that had hitherto been very persistent in their habit of bearing every other year. Since then a portion of these trees have borne fruit every year until 1875, when it was killed by the frost.—*G. F. N., in Practical Farmer.*

FEEDING VALUE OF APPLES.

There seems to be no question as to the value of sweet apples for fattening purposes, but a good many think that ordinary second and third grade apples as they come from the orchard are worthless as feed for milch cows. It is a prevailing opinion among some farmers that apples actually check the flow of milk.

It is a question of some importance this season, apples are so abundant, and if anything can be realized from the lower grades through feeding them to stock there may be quite a saving of cattle food.

There is no doubt in the minds of those who have experimented with care in the use of apples as food for milch cows that, with judicious feeding, they will not only form a palatable mess, but increase the flow of milk. The probability is that when there has been a loss of milk in connection with the use of apples, that the animals have been allowed to gorge themselves, and thus, with an unnatural condition of the digestive organs, the lacteal secretion has suffered diminution. In feeding apples the farmer should begin with small quantities, and use a small proportion of bran, increasing the amount of them gradually.

The writer hereof is well acquainted with a farmer in Kent county, Michigan, who, with this management in seasons when apples were abundant, in-

creased the aggregate of milk in so much that he counted his apples worth more for home use as cattle food than the price given for cider apples,—ten cents per bushel.

C. W. G.

HOUSE PLANTS.

A growing taste for flowers and rural embellishments is a marked feature of our times, and there are few things better calculated to attach us to our homes than the love and culture of flowers. Besides its tendency in this direction it is highly conducive to intellectual and moral culture. Of all modes of enlivening and beautifying our rooms there is perhaps none so pleasing as by the use of plants and flowers judiciously arranged. It is true they cannot be as well grown in our rooms as in a properly constructed greenhouse, still there are some kinds that can be grown and made to blossom in our rooms in a very satisfactory manner. Success in window gardening, however, can only be acquired through close observation and experience. The greatest difficulty in the way is the dryness of the air in rooms heated by ordinary methods. This evil may be partly overcome by having a suitable table. The table should be made the length of the window from two to three feet wide and perfectly tight, so as to prevent leakage, nail a strip three inches wide around the edge and fill with two inches of sand, the vapor from which will have an excellent effect, in partially neutralizing the dry air of the room. In fact, this keeping the air moist is one of the secrets of successful window culture. Rooms much occupied by the family are not the best for these plants. A room without a stove, furnace, or register, and exposed to the sun's rays, but situated so as to receive heat from the adjoining rooms when necessary, should be selected if possible. The best aspect for growing plants during the winter and spring months is due south. For the summer months east is preferable. Care should be taken not to over-water during early winter; there is much less danger of being too dry than too wet. No definite rule can be laid down as to watering; it will be safe, however, to give water (and be sure it is warm) when you see the surface dry, and be sure that you give enough to wet the soil thoroughly. The temperature of the room should be about 45° at night, rising to 60° or 66° during the day. Plants should have all the sun possible the first half of the winter, turning them frequently to keep them in shape, but in February the mid-day sun will be found too strong for some kinds, and they should be shaded or set away from the window. For others an abundance of sunlight is necessary if we would have a vigorous plant, luxuriant foliage, and well developed flowers. The importance of keeping the foliage of plants clean cannot be over-estimated, for leaves absorbing moisture from the atmosphere, and again parting with it, also inhaling and exhaling air, are among the more important organs of the plant. The pores of the leaves are very small and liable to become closed by dust, consequently they should be frequently cleaned with a sponge, so as to prevent all obstruction to healthy action. Plants are in their most vigorous condition at the time of flowering, and should not then be repotted. All plants have naturally a certain season of rest. Ascertain the period peculiar to those you cultivate, and repot only at such time. The time of flowering is, however, the best in which to take cut-

tings, as the tendency to root formation is then most active. The dropping of the leaves of a cutting is evidence that it has formed roots, but if the leaves wither and adhere to the stem it is an indication that it lacks the necessary vigor to perform its natural function of shedding the leaf, and will probably not grow. During winter and spring it will be necessary to look out for insects. Of these, the green fly is the most troublesome, but fortunately is easily managed. Mealy bug, scale and red spider are more difficult to destroy. The best remedy where but few plants are kept will be found in untiring vigilance. Sponge the leaves and stems and pick them off constantly, if you would have healthy plants. A good soil for these plants is composed of rotted sods and thoroughly decomposed manure, the proportion being about two of the former and one of the latter. If the loam should be clayey add a little sharp sand. Special soils and fertilizers are unnecessary; uniformity in moisture and temperature will accomplish the end in view. A pot should never be so filled with soil that it cannot hold enough water to pass through the ball of earth. To accomplish this a vacancy of at least half an inch should be left above the compost. If your plants should unfortunately get touched with frost, sprinkle them with cold water and shade them from the sun till the frost has been thawed out, after which gradually restore them to the light. About the latter end of May plants intended for the house during winter should be placed in the ground up to the rim of the pot. They should be turned two or three times during the summer to prevent their becoming rooted in the ground.

The following list of plants will be found desirable, being easily managed and least expensive:

Abutilons, any of these will be found excellent, especially *A. Boule de Neige*, a new white one; *A. striatum*, which is always in bloom; azaleas and camellias may be bloomed satisfactorily in a cool room without much fire heat. The Cactus tribe have a cast-iron constitution, defying the aridity of our rooms, they are all summer blossoms, except the *Epiphyllum truncatum* and its varieties, which are now in all their glory; it luxuriates in an abundance of light, not over-rich soil, and care should be taken not to over-water. Chrysanthemums have few superiors as attractive parlor plants. The Chinese primrose is a plant of the easiest culture, the single varieties are most easily managed; seed sown in May will produce large blooming plants by November. Calla (*Richardia*) is popular, and deservedly so; they should be dried up in summer, and the tubers repotted in August or September; an abundance of light and water are necessary for these. Geraniums, the variegated, scented, and ivy-leaved are desirable, the Zonale varieties being best for flowering in winter: Carnations are favorites with everybody, being not only fragrant but beautiful; a few of them flower well in winter; they should be planted in the ground in May and not allowed to produce flowers until September; about the latter end of the month they should be taken from the ground and potted; in a hot room they soon become disfigured by the red spider, consequently a cool room with good light and air are essential. Other fragrant plants are Heliotrope, Mignonette, Orange Jasminum, Sweet Alyssum, Double stock, and Tea Roses. The last after blooming in the ground all summer may be potted in September, and if carefully lifted they will give an abundance of bloom in the early part of winter, providing the plants are two or three years old at the time of planting. Fuschias are among the most beautiful of house plants; there are but few varieties adapted for flowering in winter. The best are *F. speciosa*, *F. serratifolia*, and *F. banca marginata*. Hyacinths are valuable for window

culture, either in pots or glasses. By a little management in potting at stated intervals bloom may be had a considerable portion of the winter. It is sometimes desirable to have Hyacinths grow taller than they are disposed to; this they can be induced to do by coiling a paper 7 or 8 inches wide around the plant, leaving it open at the top to admit some light. This is an old and good idea. Smilax is a beautiful vine; trained on a neat trellis, it is unrivalled as a parlor ornament. It should rest during the summer months; in autumn the tubers should be repotted; it is impatient of the hot air of a room, which is the chief cause of failure with this plant. It is sometimes asked where the profit comes in in the pursuit of this pleasure? Generally this has not been correctly estimated. To study for the purpose of following some profession is considered laudable; but to be possessed with a love for the beautiful is not considered meritorious, certainly not profitable. It is matter for wonder that so little has been said about the education of the senses, when it is known that character depends so much upon our tastes and sentiments rather than upon intellectual culture. Its importance in a scientific and practical sense is readily admitted, the difficulty being in acknowledging its influence on the moral nature of man and of society at large. The remedy for this is in educating ourselves to appreciate what is beautiful, and symmetrical, good and pure, if we would keep above the degradation into which the senses, unchecked, might lead us.

JAMES CASSIDY.

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OLD AND NEW ROSES.

The cultivation of the rose in this country, has become much more general within the last few years, but has not attained such great proportions as in England. There, owing to a favorable climate, as well as intelligence and skill in their cultivation, roses are grown in the greatest perfection, and we therefore naturally turn to English sources for information respecting varieties, mode of culture and all else pertaining to the subject. In the *Journal of Horticulture* for October 5, 1876, we find a very interesting and instructive table compiled by Mr. Joseph Hinton, the result of a rose election, in which forty-seven electors took part. The electors were composed of the most extensive and successful exhibitors and growers, both nurserymen and amateurs. Each was required to name the fifty varieties which he considered the best, and to underscore the best twenty of these.

The result has been a table that cannot but be of very great service to all rosarists, and which should call forth the gratitude of all florists to Mr. Hinton for his labors.

The table runs in this way: The first column is a number denoting the estimation in which the rose is held; next the name of the variety; then initials denoting its character; then its date of introduction; then the raiser; then come the three columns of amateur votes, *A* denoting the number of first-class votes, or those varieties underlined, *B* the number of second-class votes, and *C* the total of amateur votes; the same letters with an asterisk denote the same votes of nurserymen. The last column shows the total number of votes re-

ceived by any rose, and is the test of position. We do not think it necessary to copy the number of votes in columns *A*, *B*, and *C*; to give the total number of votes a variety has received will be sufficient. There are several blanks in the fourth and fifth columns denoting the age and the raisers: these we have filled out so far as we were able, but there are still a few which remain unknown. A few errors in the names of the raisers we have corrected. Selecting the first thirty varieties named, we have a list which should be grown by every rosarist. Since the list is not confined to hardy varieties, we are somewhat surprised at not seeing more of the tea-scented section included, notably Rubeus and Marie Ducher; still they are fairly represented, and we will not complain since the list is headed by Marechal Neil. The Marechal is here called a Noisette, not a Tea, but he is really six of one and half a dozen of the other. We find in the table eighty-six varieties. Among them are eight whose ages are unknown, and two without raisers' names attached.

It is interesting to draw a comparison between the merits of old and new roses as gauged by this election. Taking the sorts introduced within the last ten years, we find forty-five varieties new or comparatively so, against thirty-three old ones—thus evincing that among the vast number of new varieties annually introduced, there are at least two or three sorts worthy of general cultivation. In 1869, nine roses were sent out which find a place in the table; 1870 was the year of the Franco-Prussian war, so we received none. For 1871, there are ten; for 1872, three; for 1873, four; for 1874, six; for 1875, two. Surely this is a good showing for the new sorts, particularly since so many of them are among the first thirty. A collection of roses without La France, Louis Van Houtte, Marquise de Castellane, Francois Michelin, and Mlle Eugenie Verdier, would be very incomplete.

The eighty-four varieties to which the names of the raisers are attached, were sent out by thirty-seven different parties. Many of these rosarists are dead; some have retired from business. Among those still engaged in commercial life is Francois Lacharme, of Lyons. From him we may expect at least one good rose each year, since we have received them in the past. He is decidedly the most reliable of the French rose-growers, in respect to the merit of the varieties sent out by him. For proof of this we need only refer to the table, where it will be seen he furnished ten of the varieties named. Eugene Verdier follows with nine; many of these are very superior sorts, but M. Verdier is not as particular as he might be in weeding out his seedlings. On an average he sends out ten varieties each year, while Lacharme sends but three, Guillot Fils six, and Levet six. Levet has six roses honored by a place in the list, and Guillot Fils five; but we think that, in point of merit, those of Guillot Fils rank next those of Lacharme.

In conclusion, we would direct a word of caution to amateurs and others who may be guided by this list in making selections. We cannot find every excellence in any one variety. The varieties in this table were selected on account of the beauty of the flowers, little or no regard being had to their hardiness, vigor of growth, or prolificness of bloom, but are merely those which have been adjudged the most beautiful. Still, no one who loves roses,—no matter how small their collection,—would be willing to do without La France because it is a poor grower and not quite hardy, nor to reject Marquise de Castellane and Countess of Oxford because they are not fragrant.

No.	Name of Rose.	Class.	Age.	Raiser.	Total No. Votes.
1.	Marc'el Niel	N.	1864.	Pradel	47
2.	Alfred Colomb, <i>a</i>	H. P.	1865.	Lacharme	47
3.	Charles Lefevre, <i>a</i>	H. P.	1861.	do.	47
4.	Marie Bauman	H. P.	1863.	Bauman	47
5.	Mlle. Rothschild, <i>b</i>	H. P.	1867.	Vernet	47
6.	La France, <i>b</i>	H. P.	1868.	Guillot Fils	47
7.	Louis Van Houtte	H. P.	1869.	Lacharme	47
8.	Marquise de Castellane	H. P.	1869.	Vernet	47
9.	Mme. Victor Verdier	H. P.	1863.	E. Verdier	44
10.	Etienne Levet	H. P.	1871.	Levet	43
11.	Countess of Oxford	H. P.	1869.	Guillot Pere	43
12.	Duke of Edinburgh	H. P.	1868.	Paul & Son	43
13.	Francois Michelin	H. P.	1871.	Levet	42
14.	Mlle Eugenie Verdier	H. P.	1869.	Guillot Fils	38
15.	Senateur Vaisse	H. P.	1859.	Guillot Pere	38
16.	Devoniensis	T.		Foster	38
17.	Xavier Olibo	H. P.	1864.	Lacharme	38
18.	John Hopper	H. P.	1862.	Ward	37
19.	Horace Vernet	H. P.	1866.	Guillot Fils	37
20.	Dr. Audry	H. P.	1864.	E. Verdier	36
21.	Pierre Notting	H. P.	1863.	Portemer	36
22.	Marie Radv	H. P.	1865.	Fontaine	36
23.	Glorie de Dijon	T.	1853.	Jacotot	34
24.	Catharine Mermet	T.	1869.	Guillot Fils	34
25.	Emelie Hausburg	H. P.	1868.	Leveque	33
26.	Marguerite de St. Amande	H. P.	1864.	Sausal	33
27.	Camille Bernardin	H. P.	1865.	Gautreau	33
28.	Prince C. de Rohan	H. P.	1861.	E. Verdier	32
29.	Dupuy Jamain	H. P.	1868.	Jamain	31
30.	Reynolds' Hole	H. P.	1873.	Paul & Son	30
31.	Ferdinand de Lesseps, <i>c</i>	H. P.	1869.	E. Verdier	29
32.	Souvenir de un Ami, <i>c</i>	T.	1846.	Belout Befougère	29
33.	Edward Morren	H. P.	1869.	Granger	29
34.	Mme. Lacharme	H. P.	1872.	Lacharme	29
35.	Captain Christy	H. P.	1873.	do.	28
36.	Victor Verdier, <i>d</i>	H. P.	1859.	do.	26
37.	Fisher Holmes, <i>d</i>	H. P.	1865.	E. Verdier	26
38.	Souvenir d'Elise	T.	1855.	Marest	25
39.	Duke of Wellington	H. P.	1864.	Granger	25
40.	Mme. Charles Wood	H. P.	1861.	E. Verdier	23
41.	Maurice Bernardin	H. P.	1861.	Granger	23
42.	Comtesse de Serenyi	H. P.	1875.	Lacharme	21
43.	Souvenir de la Malmaison	B.	1843.	Beluze	20
44.	Marie Van Houtte	T.	1871.	Ducher	19
45.	Niphetos	T.			18
46.	Mme. Marie Finger	H. P.	1873.	Rambaud	18
47.	Abel Grand	H. P.	1865.	Damaizin	18
48.	Madame Willermoz	T.		Lacharme	18
49.	Mlle Marie Cointet	H. P.	1872.	Guillot Fils	17
50.	Mlle Annie Wood	H. P.	1866.	E. Verdier	17
51.	Hippolyte Jamain	H. P.	1874.	Lacharme	16
52.	Duchesse de Caylus	H. P.	1864.	C. Verdier	16
53.	Mons. Wernan	H. P.	1866.	Guillot Pere	15
54.	Belle Lyonnaise, <i>e</i>	T.	1869.	Levet	15
55.	Paul Neron, <i>e</i>	H. P.	1869.	do.	15
56.	Beauty of Waltham, <i>f</i>	H. P.	1862.	W. Paul	14
57.	Annie Laxton, <i>f</i>	H. P.	1871.	Laxton	14
58.	Chestnut Hybrid	H. P.	1872.	Paul & Son	13
59.	Princess Beatrice, <i>g</i>	H. P.	1871.	W. Paul	13
60.	Mlle Therese Levet, <i>g</i>	H. P.	1866.	Levet	13
61.	Exposition de Brie, <i>h</i>	H. P.	1865.	Granger	12
62.	Perle des Jardins, <i>h</i>	T.	1874.	Levet	12
63.	General Jacqueminot	H. P.	1853.	Rousselet	12
64.	Madam Clemence Joineaux, <i>i</i>	H. P.		Liabaud	12

No.	Name of Rose.	Class.	Age.	Raiser.	Total No. Votes
65.	M ^{me} Chas. Crapelet, <i>i</i>	H. P.		Fontaine.....	12
66.	Baron de Bonstetten.....	H. P.	1871.	Liabaud.....	11
67.	M ^{me} Vidot.....	H. P.			11
68.	Thomas Mills.....	H. P.	1873.	E. Verdier.....	10
69.	Jules Margottin.....	H. P.	1853.	Margottin.....	10
70.	M ^{me} G. Schwartz.....	H. P.	1871.	Schwartz.....	10
71.	Duc de Rohan.....	H. P.		Levigne.....	9
72.	Antoine Ducher, <i>j</i>	H. P.	1866.	Ducher.....	9
73.	Auguste Rigotard, <i>j</i>	H. P.	1871.	Schwartz.....	9
74.	Princess Mary of Cambridge, <i>j</i>	H. P.	1866.	Paul & Son.....	9
75.	Mons. E. Y. Teas.....	H. P.	1875.	E. Verdier.....	8
76.	Sir Garnet Wolseley.....	H. P.	1874.	Cranston.....	8
77.	Rev. J. B. M. Cannon, <i>k</i>	H. P.	1874.	Turner.....	8
78.	Madame Hippolyte Jamain, <i>k</i>	H. P.	1871.	Garcon.....	8
79.	Lord Macauley, <i>k</i>	H. P.	1863.	W. Paul.....	8
80.	Comtesse C. de Chabillant, <i>k</i>	H. P.	1859.	Marest.....	8
81.	Madame Beavy.....	T.		Guillot Pere.....	8
82.	Richard Wallace, <i>l</i>	H. P.	1871.	Levigne.....	8
83.	Star of Waltham, <i>l</i>	H. P.	1874.	W. Paul.....	8
84.	Marechal Vaillant, <i>l</i>	H. P.	1861.	Lecompte.....	8
85.	Celine Fonestier, <i>l</i>	N.	1859.	Andre Leroy.....	8
86.	Miss Hassard.....	H. P.	1874.	Turner.....	7

In the above list, the names followed successively by the same italic letter (*a a*, *b b*, etc.) received each an equal number of votes, and therefore rank as of equal merit.

H. B. ELWANGER.

Rochester, N. Y.

THE COLOR AND FRAGRANCE OF FLOWERS.

The chemical transformation in the bodies of living plants, by which the most manifold and brilliant colors are produced, are almost entirely unknown to us. We see a flower pass through the entire scale of red, from the softest pink to the darkest purple brown, but can give no explanation whatever of the mysterious process. We know, for instance, the light of the sun greatly influences the color of living plants, and experience has taught us, that in most cases, its total exclusion is equivalent to the absence of every color, in other words, that it produces white leaves and blossoms. However, this rule is by no means without exception, as many roots, the roots of alcaanna, for instance, although buried in the soil, and completely excluded from the rays of the sun, possess a strong and vivid color. We can explain neither the rule nor the exception: on the contrary, we know that, as far as lifeless matter is concerned, mineral or vegetable colors are weakened, and gradually destroyed rather than enhanced, by the action of light. Our ignorance in this respect restricts our influence upon the coloration of flowers and blossoms to a very modest and merely empirical one.

A mere chance has led to the discovery that the infusion of sulphates of iron into the soil, darkens the hue of certain plants which contain a considerable quantity of tannin; and the gardeners have profited by this discovery for the culture of the hortensia. But these examples are rare, and as yet, we must renounce all claim to the control and influence of the natural course of things in

this field. We may be able to change the color of a plant or flower by transferring it into another soil, but we are never sure of the result, and can not give any scientific explanation of it. The fragrance of a flower is likewise produced by chemical action which hitherto has escaped our closest investigations; we see the result; we see that a flower, like the bee which transforms pollen into honey and wax, fabricates volatile oils out of air, water, and light: but the chemical process itself is a complete mystery to us. We only know that the slowness or rapidity of the evaporation of these oils is the cause of the stronger or weaker odor of the flower. The mode of their formation is a good example of the unlimited variability and manifold variety of vegetation's chemical powers. Many plants do not limit themselves to the formation of a certain volatile oil in the blossom or flowers, but produce at the same time various kinds of oils in their different parts. The orange tree, for instance, produces volatile oils in the leaves, flowers, and the rind of its fruit. A close investigation convinces us that these differ, not only in their smell and taste, but also in their weight, density, and other physical and chemical qualities; that, in short, they are different and independent substances which can not be mistaken for each other. The same plant must therefore possess three different organisms, by which it generates three entirely different substances out of the same ingredients. What chemical laboratory, be it ever so well furnished and skillfully managed, can boast of results in any respect so wonderful?—*A. Vogel, in the International Review.*

TREE AND SHRUB ELECTION.

The *Rural New Yorker* solicited from the experienced horticulturists of the country a list of twenty-eight trees and twenty-five shrubs that, according to their estimates, should be perfectly hardy in the climate of New York, and be most desirable for cultivation. The responses were cordially made, and a great number of lists were recorded.

The elected shrubs and trees are given below in the order of their merits as pronounced by the votes.

SHRUBS.

1. *Hydrangea paniculata grandiflora*.
2. *Chionanthus Virginica* (White Fringe).
3. *Prunus triloba* (Double-flowering plum).
4. *Deutzia gracilis* (Graceful Deutzia).
5. *Spiraea prunifolia fl. pl.* (Double-flowering Plum-leaved Spiraea).
6. *Diervilla Japonica*, or *Weigela rosea*.
7. *Hibiscus Syriacus variegatus fl. pl.* (Double variegated Rose of Sharon, or Shrubby Althaea).
8. *Philadelphus grandiflorus* (Large-flowered Mock-orange).
9. *Rhus Cotinus* (Smoke-tree, or Venetian Sumach).
10. *Syringa Persica* (Persian Lilac).
11. *Berberis vulgaris purpurea* (Purple-leaved Berberry).
12. *Diervilla hortensis nivea* (White-flowered Weigela).

13. *Cydonia Japonica* (Japan Quince).
14. *Corylus Avellana purpurea* (Purple Hazelnut).
15. *Cornus Florida* (Flowering Dogwood).
16. *Forsythia viridissima*.
17. *Spiraea lanceolata*, or *Reevesiana fl. pl.* (Lance-leaved, double-flowering Spiraea).
18. *Viburnum plicatum* (Plaited-leaved Viburnum).
19. *Cercis Canadensis* (American Red-bud).
20. *Spiraea*, or *Exochorda grandiflora*.
21. *Deutzia crenata*, *fl. pl.* (Double-flowering, crenate-leaved Deutzia).
22. *Cornus mascula variegata* (Variegated Cornelian Cherry).
23. *Halesia tetraptera* (Four-winged Silver Bell Tree).
24. *Lonicera Tartarica* (Tartarian Honeysuckle).
25. *Viburnum lantanoides* (Hobble-bush).

The following are the elected

TREES.

1. *Acer platanoides* (Norway Maple).
2. *Fagus sylvatica purpurea Riversii* (Rivers Purple Beech).
3. *Betula alba laciniata pendula* (Cut-leaved Weeping Birch).
4. *Larix Europea* (European Larch).
5. *Magnolia conspicua Soulangeana* (Soulange's conspicuous-flowered Magnolia).
6. *Salisburia adiantifolia* (The Maiden-hairleaved Salisburia, or Ginkgo Tree).
7. *Acer Saccharinum* (Sugar Maple).
8. *Liriodendron tulipifera* (Tulip Tree, Poplar, White Wood, Canoe Wood, Virginian Poplar, etc.).
9. *Fagus sylvatica pendula* (Weeping Beech).
10. *Ulmus Americana* (American or White Elm).
11. *Pyrus aucuparia* (European Rowan Tree, or Mountain Ash).
12. *Cladrastis tinctoria*, or *Virgilia lutea* (Yellow-wood).
13. *Fagus sylvatica heterophylla* (The various or cut-leaved Beech).
14. *Aesculus Hippocastanum* (The common Horse-chestnut).
15. *Liquidambar Styraciflua* (Sweet-gum Tree).
16. *Acer dasycarpum laciniatum Wierii* (Wier's Cut-leaved Silver Maple).
17. *Alnus glutinosa laciniata imperialis* (Imperial Cut-leaved common Alder).
18. *Magnolia acuminata* (Cucumber Tree).
19. *Gymnocladus Canadensis* (Kentucky Coffee Tree).
20. *Aesculus rubicunda* (Red Horse-chestnut),
21. *Taxodium distichum sinense pendulum*, or *Glyptostrobus pendulus* (Chinese pendulous Cypress).
22. *Kochreuteria paniculata*, or *Sapindus Chinensis* (Panicked-flowering Koelreuteria).
23. *Tilia Americana* (American Linden, or common Basswood).
24. *Quercus pedunculata purpurea* (Peduncled purple English Oak).
25. *Magnolia purpurea Lennei* (Lenne's Purple Magnolia).

The following shrubs, arranged relatively to merit, received a goodly number of votes, but not a sufficient number to place them in the above list:

1. *Pavia macrostachya*, or *Aesculus parviflora* (Long-racemed Pavia).
2. *Hydrangea quercifolia* (Oak-leaved Hydrangea).

3. *Clethra alnifolia* (White Alder).
4. *Rhodora Canadensis*.
5. *Azalea nudiflora* (Pinxter Flower).
6. *Viburnum opulus sterilis* (Guelder Rose, or Snowball Tree).
7. *Calycanthus floridus* (Carolina Allspice, or Sweet-scented Shrub).
8. *Spiraea Douglasii*.
9. *Euonymus atropurpureus* (Burning-bush, or Spindle-tree).
10. *Crataegus coccinea* fl. pl. (Scarlet double-flowering Thorn).

And the following trees would have been added, in the following order, had the election-list been thirty-five, instead of twenty-five :

1. *Acer dasycarpum* (White Maple).
2. *Fagus sylvatica* (European Beech).
3. *Magnolia tripetala*, or Umbrella Magnolia.
4. *Quercus concordia* (Golden Oak).
5. *Quercus fastigiata* (Pyramidal Oak).
6. *Magnolia macrophylla* (Great-leaved Magnolia).
7. *Acer Pseudo-Platanus* (Sycamore Maple).
8. *Alnus glutinosa laciniata* (Cut-leaved Alder).
9. *Oxydendrum arboreum* (Sorrel-tree).
10. *Catalpa bignonioides* (common Catalpa).

It will be observed that several Magnolias are mentioned in the above lists. Messrs. T. C. Maxwell & Bros. remark, after naming two in their list: "But there are other Magnolias of great value and exceeding beauty. By experiment and careful sifting, the great desideratum of hardiness has been secured, and when the fact is thoroughly made known, no attraction for the lawn will be more eagerly sought."

HORTICULTURE IN EUROPE AND AMERICA.

Under date of October, 1876, Prof. W. J. Beal, of the Agricultural College, wrote to Secretary Thompson that among the Sophomores now in attendance at the College is a stalwart young man from Denmark, Europe. He had been in this country less than two years, when he was advised, in answer to his inquiries of the editor of the American Agriculturist, to come to this College. So far, he has worked his own way in this country, and now stands respected for manners and scholarship by every one in his class.

At one of the regular weekly exercises last week, he read the following original piece, which seems to me worthy of a place in the horticultural literature of the State:

Happiness is the prime object in human life, the one thing which every one is always striving to possess. Among all the sources from which happiness may flow, the enjoyment of the surroundings and productions of nature, is perhaps the richest, purest, and most gratifying. Horticulture, in all its departments, from the transplanting of the little, delicate seedling, to the laying out of a landscape, deals wholly with nature, and gives the best opportunity

for the enjoyments of nature's beauties and delicious productions, that any occupation can offer.

Horticulture has always been a pet occupation among the civilized nations of the earth. It originated with mankind; it was instituted by our Creator himself, who put Adam and Eve in the garden of Eden, to cultivate and keep it: and no doubt it will continue to flourish as long as man is left to draw nourishment from mother earth.

Among the ancients, horticulture was held in high esteem. There are many allusions to gardens in the Bible, and the renowned gardens of Babylon are known to have existed about two thousand years before Christ. The inhabitants of ancient Greece were noted for their horticulture. The Romans were still more so, especially in the cultivation of flowers. It is recorded that the Emperor Nero, at a single feast, used roses to the value of two hundred and eighty thousand dollars, a consumption of flowers with which the luxuries of modern monarchs cannot compare. After the fall of the Roman Empire there was a relapse in horticulture as in all other peaceful occupations. When peace at last was restored, France was one of the first countries to revive her horticulture, and from there it spread to Holland, Germany, and in succession to all other European countries.

In Europe this branch of industry has reached a high degree of perfection, not only among the rich people, but also among the farmers and laboring classes who are highly interested in the cultivation of their gardens.

Some idea of European art in landscapes, gardening and general horticulture may be conveyed by a description of a so-called nobleman's private place. Let us for a few moments visit Chatsworth, England, the seat of the Duke of Devonshire. You will there see a park, six miles long and two miles broad, walks through it, and your vocabulary of well-bred expressions of admiration will soon be exhausted. Here you will see a fairy village of cottages built in all the fanciful styles of architecture that human imagination can suggest, each of which is surrounded by appropriate groves of rare and beautiful trees, and shrubs. There you see a large area covered with rocks, that tower upwards in grand resemblance to the Alps. This elevation is covered with Rhododendrons and other alpine plants, while gushing streams and splashing cataracts are descending through the cliffs. Here your eye meets the fanciful display of an Italian garden, covered with tasteful flower-beds, on which hundreds of thousands of flowering plants are displayed. There you see a woodland where herds of large tame deer are leisurely grazing. Here your attention is attracted by the splashing water and looking up you see the highest fountain in the world, throwing a column of water 267 feet high, returning in diamond-like shower drops, clear as crystal. There a giant green house rises before your view, nearly one hundred feet high, covering a garden an acre and a half in extent, in which the choicest tropical plants are grown, planted out in the soil as in their native climate.

A series of hot water pipes perpetually maintains the temperature of Cuba. Through the middle runs a broad road, over which the Duke and his guests occasionally drive four-in-hand. Here you dwell with delight on the banks of a beautiful lake, bordered by groups of drooping willows while majestic swans and merry ducks are floating about on the still water. There your path is suddenly obstructed by an immense rock, and you see no alternative but to turn and go back; but your cicerone quietly touches a spring concealed in the sod and, to your surprise, the large rock is cleft before you, divided into two pieces.

each moving aside, while a path through the middle lies open for you. By touching a spring on the other side it is again brought back to its former position. Visit all this, and, if you have time, go through the kitchen gardens, orchards and forcing houses, where flowers, fruit and vegetables are grown out of their season. Travel through Europe, and notice the thousands of places similar to this one, and you will have an idea of European horticulture.

But it is not only in these places, owned by so-called noblemen, that you will find Flora worshiped. The surroundings of the farmer's cottage and working-man's hut show indisputable evidence of taste for gardening. According to the circumstances of the owner, you will generally find around every farmhouse from one acre and upwards, enclosed by a fence to separate it from the rest of the farm, neatly laid out with grass-plats, flower-beds, and graceful curving walks, and planted with appropriate trees and shrubbery. In some secluded corner you will find a summer-house covered with ivy, or other trailing plants, under which the farmer, after having spent the long hot day in hard labor in the field, now enjoys his evening pipe surrounded by his happy family.

Now let us contrast this with American horticulture, and we shall see how much it may yet be improved. Around the average farmer's house, even in New England and the older States, we rarely meet with a well-kept garden; not because they cannot afford it, for the American farmers are better off than the European tillers of the soil, they having no landlords that, like immense parasites, suck nourishment from their pockets. It is simply because the interest and skill is wanting. An American farmer would think it foolish indeed to spend fifty dollars in the laying out of a garden and an appropriate plantation of ornamental shrubbery, never thinking or caring for the comfort and general good appearance it would add to his place. Fruit trees are often set out with a view to making money from them, but too often they are either trimmed up on the model of a broomstick, or they are left to themselves, half choked by pig-weeds, with straggling branches shooting out everywhere but in the top, and the trees leaning against each other like so many drunken sailors. Even the cultivation of a proper selection of vegetables is sadly neglected by many farmers,—only three or four of the most common sorts being cultivated—while the numerous assortment that embellish the table of the European farmer is entirely unknown. Horticulture is so well known to be a profitable business near the larger towns, that it is useless to dwell upon it. The only thing that is not well understood is, that it is necessary to understand the business in order to be successful.

Horticulture ought to be encouraged for the refining influence that the plants have upon the human mind. Who does not admire a well-grown specimen of double geranium, when its superb umbels of scarlet flowers are stretching out from it in all directions? Who does not love to inhale the delicious odor of the opening rosebud or the humble pink? We admire the graceful drapery of the Virginia creeper, when encircling the post of the piazza or clinging to the side of the wall. But all these impressions on the senses are not without their effects when daily received. A love for their cultivation is awakened, a taste for the beautiful is acquired, a tenderness felt toward them, a pleasure and cheerfulness is engendered which spontaneously and insensibly communicate themselves in our dealings with our fellow men, both in our business and in social life.

Of what great value, then, is the association of plants to all, and especially to the child whose plastic mind is so easily impressed upon, whose flexible

emotions, likes and dislikes, are so easily moulded into the shape in which they are to be carried through life. And when a child who grows up under such influences has reached mature age, with what delight can such a man or woman dwell upon the memories of their childhood, and the pleasant associations of their early home.

There is still another feature which alone would form sufficient grounds to encourage horticulture: it is the wholesome, healthful exercise which this occupation affords. The work itself being of a somewhat lighter nature than farming, still gives an abundance of exercise to keep both body and mind in a vigorous condition. It is a notorious fact that many of our most successful nurserymen have in their youth been merchants or students of some profession; but by failing health they have been obliged to turn their attention to horticulture, and are now reaping the reward of the choice.

The health of business men in general would be much improved if each one who owns half an acre of ground would take an interest in horticulture, and cultivate it with their own hands. But especially would this out-of-door occupation benefit the American ladies if they could be induced to take an interest in the cultivation of flowers, at least as much as is done by the European ladies. If it only could be the fashion that every lady should, with her own hands, cultivate so many plants, and that the one who had the most and best grown specimens should be the queen of fashion, then it could be said that fashion for once had done something useful. Such a fashion would bring blood to the cheeks of the vast number of pale languid shadows we see tripping about in the streets: and it would not only give health and longevity to themselves, but their vigor would be transmitted to all succeeding generations, thereby serving their country better than do the political and woman's rights questions they are bothering themselves about at present.

Is not all this inducement enough, for each and all, to take a greater interest in horticulture? It offers money to money-seekers, pure elevated enjoyment to the admirers of nature's productions, and healthful vigor to the weak and delicate, all of which are elements of human happiness.

A ONE-HUNDRED DOLLAR INVESTMENT IN HORTICULTURAL BOOKS.

Not long since we received a communication requesting that a list of horticultural books be given suitable for a neighborhood or single individual, the amount to be limited to one hundred dollars.

The matter was immediately referred to Prof. Beal, of the Michigan Agricultural College, who has made a carefully prepared list, and says:

The list is made upon the basis that the books are to be all purchased at once, thus securing the lowest discount for cash.

This matter of getting libraries for instruction upon agriculture and horticulture and placing them where they can be used, and used to a purpose, cannot well be over-estimated in value. The investment of one hundred dollars, upon many large farms, in a single machine, is considered trivial, while the same amount invested in books and periodicals is enormous. It is my conviction that the latter investment would oftener be the most judicious and profitable. I present this list to you with the hope that some of your correspondents may supplement it with a list of agricultural publications upon a similar basis.

A LIBRARY OF HORTICULTURE.

Large and Small Fruits.

Five volumes Michigan Pomological Society.
 Warder's American Pomology.
 Barry's Fruit Garden.
 Thomas' American Fruit Culturist.
 Downing's Fruit and Fruit Trees of America.
 Quinn's Pear Culture for Profit.
 DuBreuill's Vineyard Culture.
 Fuller's Grape Culturist.
 Strong's Culture of the Grape.
 Five volumes Fruit Recorder 1871-2-3-4-5.
 Small Fruit Instructor, Purdy.
 Culture of Small Fruit, E. P. Roe.

Vegetable Garden.

Money in the Garden, P. T. Quinn.
 Gardening for Profit, Henderson.
 Farm Gardening and Seed Growing, F. Brill.
 Burr's Vegetables of America.
 Root's Garden Manual, 1875-6.
 White's Gardening for the South.

Floriculture.

Practical Floriculture, Henderson.
 Gardening for Pleasure, Henderson.
 Window Gardening, Williams.
 Choice Stove and Green-House Plants, Williams; two volumes.

Trees and Landscape.

Bryant's Forest Tree Culturist.
 Hoopes' Book of Evergreens.
 Kemp's Landscape Gardening.
 Downing's Landscape Gardening.

Insects.

Injurious Insects, A. J. Cook.
 Insects Injurious to Vegetation, Harris.

Botany.

The Treasury of Botany; two volumes.
 Wood's Botanist and Florist.
 Paxton's Botanical Dictionary.

Current Periodicals.

Four or five of the best weekly or monthly papers devoted in whole or in part to horticulture.

Illinois Horticultural Reports.
 Missouri Entomological Reports.
 American Agriculturist; last four volumes.
 Reports American Pomological Society.

Miscellaneous.

Farm Drainage, French.

Peat and Its Uses, Johnson.

Dana's Muck Manual.

How Crops Grow, Johnson.

How Crops Feed, Johnson.

Rural Affairs, J. J. Thomas ; seven volumes.

HORTICULTURAL EDUCATION.

In a former article on this subject we gave a brief review of the various branches of knowledge that enter into and help to make up a horticultural education. We may now ask, How shall such knowledge be made general and popular? A perfectly successful answer to this question is perhaps impossible, but I may, perhaps, indicate some means by which this may be accomplished in part.

1st. I would have the first principles of this education imparted to the children in the family. The orchard, the garden, the lawn, and the grove should each be made a school of horticulture ; and every tree, shrub, vine, and plant should be employed as illustrations of those branches of knowledge as go to make up such an education. All the principles above referred to should be brought out and illustrated, and impressed on the minds of the young members of the family by the parent or gardener in the presence of these living illustrations of the laws of vegetable life. Thus both the teacher and the taught will be forming habits of careful observation, and at the same time become thoroughly conversant with the various objects of horticultural attention. In this manner every child might be brought into communion and love with nature, and thus their higher natures will be developed and their tastes cultivated and refined.

2d. The press, the great source of light and power, should be invoked to aid in this work of educating and refining the people. Books and papers containing the best thoughts of the able masters on these subjects should be bought and read. Those who really feel an interest in this subject should use their influence to extend the circulation of those publications that teach the correct principles of horticulture. The importance of this can hardly be comprehended by those who have had but little experience in the matter. The frequent inculcation of these lessons in the weekly or monthly issues, slowly, perhaps, but surely impress the mind with the value of these principles, and lead to a greater or less employment of them in practical life. Especially is the mind of the young likely to be influenced by these teachings, and thus a higher taste and more correct knowledge of these subjects become common. Every family should, therefore, be provided with one or more good journals, teaching correct horticultural principles ; and also a few good books treating on the same subjects.

3d. May we not hope that the time will come soon when our schools will inculcate at least the more general principles of a horticultural education as outlined above? As much of the happiness of our people depends on the pleasant

arrangement of our homes and the cultivation of those more delicious productions of the orchard and garden, it would, perhaps, not be an inappropriate use of our schools, both common and select, to furnish our youths with a general knowledge of horticulture. But it is to our Agricultural Colleges, those institutions of a higher education in rural science, instituted and fostered by the government, that we are to look for the higher training of our youth that will raise up a band of teachers and exemplars who will lead us by their teaching and examples to higher ground and a more refined taste in regard to matters of this nature.

4th. Last but not least, we look to our horticultural societies, State and local, to disseminate and enforce a higher knowledge of horticulture among our people, both by their theoretical teaching and the examples of their members. The various essays, reports, and discussions that may be given to the public through these associations are so many authoritative expositions of the principles of horticulture as understood by the members of such societies.

The examples of such persons are also of great value, and when exhibited in a carefully arranged pleasure ground or a well kept lawn it becomes contagious. A little aid to these societies from our Legislatures in this work of elevating, refining and thus enhancing the happiness of the people, would but be the attention and indorsement of true and enlightened statesmanship, and it would certainly be an appropriate use of a portion of the public funds.

L. J. TEMPILN.

OBJECT LESSONS IN HORTICULTURE.

The record of admissions into the Centennial exhibition at Philadelphia shows that over 100,000 persons visited it in one day. Now of that large number it may be reasonably supposed that at least half were pleased with the horticultural display just then in all its glory. Did not the majority of the visitors carry away to their homes a higher sense of the beautiful than they ever before experienced? And without doubt many of them will treasure in memory for future use suggestions of improvement to be utilized in their own grounds. This system of practical education is very common in some countries of Europe. On the occasion of a "Bank Holiday" last fall in London, 64,613 persons visited the Royal Gardens at Kew in one day. At the Horticultural Society's Garden at South Kensington on the same day there was 5,705 admissions. Doubtless the advanced stage of horticulture abroad, as indicated by the universal window gardens in all the large cities, and the greater circulation of periodicals devoted alone to horticulture, is mainly due to the system of public free education afforded by the little parks and pleasure grounds so numerous through and around the cities and towns. Their people imbibe a love for trees and plants by daily intercourse with them; and as the grounds are almost universally laid out and planted with taste, their judgment conforms to the prevailing styles, and thus, in a small way, the lessons are reproduced in their own yards and gardens. No thought have we of casting the least discredit upon books as a means of information, but we would impress the idea of the great benefit to be derived from meeting together for mutual improvement and from

attendance upon exhibitions of horticultural products. And why not have a public garden in every town in our land?—*N. Y. Tribune.*

CARBOLIC ACID FOR INSECTS.

The time has almost come again when "the little busy bugs" will open up their summer campaign, and dispute with the "lords of creation" for possession of the "fruits of the earth." Allow me thus early to call attention to an article, the merits of which everybody knows, but which many dare not use,—I refer to carbolic acid. Prepared as indicated, it cannot, I think, hurt the most delicate house plants, and it is sure to kill insect life.

My plan of preparing is as follows:—I obtain crude carbolic acid; I use it in this form because it is stronger and better for the purpose, and costs but very little (about twenty-five cents per gallon, I think). I pour a quantity of this dark crude acid into a quantity of good strong domestic soft soap; stir well together, and allow to stand for a few hours. I then test the compound by mixing a little of it with soft water. If too much acid has been added, oily particles of carbolic acid will be observed floating on the surface. This shows that more acid has been put in than the soap will incorporate or "cut," and more soap should be added to balance the excess of acid. No more definite rule can be given, as so much depends on the strength of the soap. Two or three tablespoonfuls of the acid to a quart of soap may be first tried. I prefer to make it as strong with acid as the soap will perfectly cut. A very little practice will enable any one to compound it correctly. The refined acid may be used when the crude is not at hand. When prepared as above, make a moderately strong suds, and apply with syringe or sponge. In using on very delicate plants, should any fear be felt for the plants, they can be rinsed off after a few minutes. My first and eminently successful use of this compound was some years since, on a block of young cherry trees, some fifty thousand in number. The black aphid "came down like the wolf on the fold," only "they came not as single spies, but in whole battalions." It soon became an interesting question as to who was the proprietor of this particular block of trees,—myself or the "bug Ethiopian." A disinterested observer of judicial turn of mind, judging from the general appearance of things and the very "at home" air assumed by the bugs, would have said they had the best case. He would, at least, have been compelled to admit they had "nine points of the law" (possession) in their favor. I never saw the like before. The trees were alive with aphid. The only scarce things on the trees were leaves, there being hardly enough to afford "standing room" for all the dusky guests. However, being a convert to the doctrine of "squatter sovereignty," I declared war, and failing to decrease the numbers by ordinary means, I compounded soft soap and carbolic acid, and with a single application exterminated the enemy.—*Cor. Gardener's Monthly.*

AUTUMN LEAVES.

What is the cause of these beautiful and endlessly diversified colorings of the leaves in autumn? The immediate cause is the lessened activity of their pores, or breathing organs, owing to the feebler illuminating power of the sun, which is nearer the horizon at midday, shines upon it more obliquely, and sets sooner. It has been observed that plants bend *from* the red or calorific rays of the sun's spectrum, instead of toward them, as they are found to do in regard to every other ray. From this curious circumstance the inference has been drawn that the effect of these rays is to check the vegetative processes, and favor the formation and growth of the blossoms and fruit in which the activity of every plant terminates. Light is only a secondary cause of activity in blossoms, while it is the principal cause of activity in leaves. If the deficiency of light is compensated by an increase of heat, blossoms may be made active even in total darkness, while the leaves will present only a very imperfect vitality. Thus we see that heat favors the production of the blossom, while it has little or no effect upon the leaves. And in accordance with this, it has been further observed that the heat rays are more powerful in autumn than at any other season; while the actinic rays which stimulate germination, and the luminous rays which are required for the formation of the tissues and their products, are proportionately diminished. The rise of the sap in spring is quickened by the actinism which is then most abundant in the solar beams; the secretion of carbon in summer is due to the greater predominance of light; and the reversion of the sap, the ripening of the fruit, and the discoloration of the leaf in autumn, may be traced to the increased power of the parathermic influence, from which the plant is found to bend, and which appears to be a modified form of heat. The distribution of plants over the surface of the earth, as well as their periodic changes, are dependent upon these causes,—the greater or less amount of actinism, light, or heat in the climates, and the seasons in which they grow. Given the proportion of these different principles of the sunshine of different countries and seasons, and it will be easy to predict the character of their vegetation and the nature of their vegetable products.

Bearing these curious influences in mind, it is easy to understand why, with the diminished light of the shorter days of autumn, the natural stimulant of vegetation should be correspondingly withdrawn, and the circulation of the sap through the lamina, or blade of the leaf, cease. Carbon cannot be formed from the atmosphere, except under the influence of light; and when this stimulant is weakened, the vital powers of the leaves are proportionately diminished, and the affinity which they have for oxygen acts with little opposition. The great natural life-process of deoxidation not only stops, but is reversed. Oxygen is absorbed, and carbon, the product of combustion, is given off; and the chlorophyl, or that carbonaceous product, which gives the green, healthy color to leaves, is slowly oxidized, and rusts away into the various tints of autumn. The hues of the foliage become brighter as the process of oxidation goes on; those of early autumn being dull and dark greens, passing later in the season into the bright yellows and reds, which make our woods full of sunshine, and their depths more brilliant than the open fields, or the mountain-tops. The coloring of leaves and fruits undoubtedly proceeds from the same cause, viz.: a cessation of the deoxidating process in the contents of the superficial cells. The leaves ripen in the same way that the fruit does; and the chemical change which the chlorophyl in both undergoes, indicates that

nutrition has ceased and growth has culminated. The erythrophyl, or peculiar red substance which the young unfolding leaves contain in early spring, before the chlorophyl has had time to develop itself, and which gives them their peculiar autumnal tint, passes away as the season advances, lingering only in the leaf-stalks, which usually continue from first to last of a reddish hue: but it reappears in autumn, when the chlorophyl has vanished from the leaves; only it is then more oxidized, and becomes completely discolored by further oxidation, as in the fallen leaves that have lain long on the ground. We thus see a most interesting connection between the leaves of spring and those of autumn; and are deeply impressed by the wonderful co-relation between the tinting of the smallest and most obscure leaf of the forest, and the changing qualities of the sunshine. The leaf changes as the sunbeam itself changes: and as the light of heaven fades through all the hues of the spectrum, from the darker actinic to the brighter parathermic, so does the sympathetic leaf pass through from the dark green colors of summer to those brilliant tints of autumn whose fine effect in the landscape we all admire.—*Dr. MacMillan, in Scientific Farmer.*

CATS IN AGRICULTURE.

Mrs. Swisshelm gives a chapter in the Pittsburg Commercial on "Cats," that entomologists will not be slow to appropriate to their use in arguing the bird-insect question. She says: If our agricultural societies would offer premiums for the scalps of these domestic tigers, just as counties used to do for those of their more harmless first cousins, wolves, we would in a few years be done not only with the green worms, but the green grasshoppers, which come up like a cloud and spread over the land, because the millions of birds that should be on hand to eat them as they come out of the ground have been destroyed by our pet tigers.

No one who has not paid attention to the subject can have any idea of the number of birds and birds' nests destroyed in one year by one cat, and to me it is a wonder that there are any birds left in the United States. To be sure, there are very few. I have heard more bird songs here in Leipsic in the seven weeks I have been here than I ever did in seven years at home, and there I lived most of the time in the country, while here I am in the city. Our street terminates abruptly on the confines of a garden which must embrace twenty acres, and surrounded on three sides by high houses. Our block is the last on the street, and our rooms at the end next to this garden, which is full of tall trees and shrubbery and flowers and pleasant walks, and I think there are more birds in it than in Cherryhill township, Indiana county, Pennsylvania, in which our summer home was situated, and which is a very large township, not less than twenty miles square.

Every family there but one kept cats to amuse the children and catch rats, and as a cat never touches a rat while it can get a bird, or a nest of birds or eggs, and as they can easily follow a bird to its nest and cannot follow a rat to its, there are not many birds left when cats fall to catching rats. Nobody raises fruit there except by accident. All the trees were decorated with caterpillar's nests, and the last year we were there the worms attacked the elder bushes and blackberries, the main dependence of the people for fruit.

One might see "intelligent farmers" sitting caressing cats, while the worms were devouring their crops, and their faithful guardians were in pussy's maw. I used to be so tried that I should have been resigned to the dispensation of Providence if I had heard some morning that the cats were eating the men instead of the birds. It would certainly be a great blessing to the country if they would just take a taste off enough members of agricultural societies to wake them up so that they could see the havoc these cruel, treacherous beasts of prey, these unnatural, monstrous companions of our children, have been making with our forest songsters and prairie fowls.

THE ENGLISH SPARROW.

There are many charges perferred against the imported house sparrow that we know he is not guilty of in his native Island, nor do we believe the following is true of him. The Turf, Field and Farm, in answer to a correspondent, says: "They will drive out every feathered songster you have, even to the robins; not even quails can withstand them." In England they have a score of different kinds of small birds, two-thirds of them being smaller than the sparrows, and more than half are real songsters, yet we never heard of them being driven away by the "pugnacious sparrow." He is a domestic bird, seldom staying more than half a mile from a house, barn, or stack of some kind, but he is quite at home in places where other birds are rarely if ever seen, hence, when introduced into cities, we find him in the crowded streets, on the sidewalks, etc., and this may have led to the belief that he drives the other birds away.

In the Centennial buildings, especially in Agricultural Hall, scores of sparrows were seen flitting about from place to place, often alighting on the floor within a few feet of the crowd, and as there were no other birds in the hall, the natural, but unfair inference of a stranger would be "the sparrows have driven them out;" but it is a question if no sparrows had been there whether any of our feathered songsters would have ventured inside the building.

The sparrow destroys the canker worm and other insects, but we never knew him to destroy fruit. Our southern visitors may eat some insects. I have seen one take a potato-bug on the wing, then alight and destroy ten cents worth of early peas. As soon as fruit is ripe they go for that, and when it is gone they leave us; but the sparrow pays for the grain he eats in the summer by staying with us all winter, and with his merry chattering and chirping as he flits about our dwellings helps to break the monotony of the dreary winter months.

E. BRADFELD.

TRANSPLANTING EVERGREENS EARLY.

In consequence of the teachings of a few writers on horticultural matters, the idea has become quite prevalent that evergreens should not be transplanted as early in spring as deciduous trees. I have frequently read carefully-prepared

essays upon this subject, in which the authors attempted, with all the science at command, to show why evergreens should not be moved as early as other trees and shrubs: still, with all this contrary teaching, I have practiced early planting all my life, and with uniform excellent results. I will admit, for the sake of argument, that evergreens can be transplanted after growth commences in spring with more certainty of success than with some kinds of deciduous trees: but it does not follow that early planting would not be still safer and better. By early transplanting, I mean as soon as the frost is out of the ground, and cold, freezing weather is over in spring. By moving evergreens at this time we get the benefit of the early spring rains, which carry the soil in among the roots and fill up all interstices which may be left in planting, and when the weather becomes warm enough to excite growth the roots are in close contact with the soil, where the first new fibres can find sustenance without pushing out to any great length. Then, again, evaporation from the leaves, which causes shriveling of the shoots, is not so likely to follow in cool, moist weather as in dry and warm, which usually comes late in spring. I move more or less evergreens every spring, of various ages and sizes, and it is a rare occurrence to have one die if the operation is performed early. The frost is as yet scarcely out of the ground, still I am making preparations to-day for setting out an arbor-vitæ hedge, with plants six to eight years old, and if one in a hundred fails to grow I shall be very much disappointed. I also make a practice of moving pines, spruce and other kinds of hardy evergreens as early as possible, and never experienced the least difficulty in making them all grow.

More trees of all kinds are lost through planting too late in the season than from all other causes combined, and I fear that we have borrowed this idea of late transplanting of evergreens from nursery agents, who, for the purpose of prolonging the season of sales or to ease the minds of their customers on account of losses in consequence of their late delivery of goods, urge that late transplanting of evergreens is preferable to early.—*Cor. Rural New Yorker.*

EVERGREEN PLANTATIONS.

A few hours ago while walking across the grounds against a strong cutting March wind, I stopped behind a Norway spruce to get a few easy breaths before proceeding, and while enjoying the protection I appreciated the forethought which suggested the setting of that evergreen. Since then I have seen several pedestrians stand and enjoy the same screen, and have no doubt that each one thanked inwardly the man who planted that tree.

This has set me to thinking seriously about evergreens for screens. The tree mentioned has been planted sixteen years, stands twenty-four feet high and spreads twelve feet at its base. The trouble of planting was very little, the growth has been rapid and its beauty is unsurpassed. None but appreciate the beauty of evergreens at this season of the year when deciduous trees are a mass of leafless stems; but judging from appearances but few appreciate their utility as a screen of protection from cold blasts.

Air in motion takes heat away from bodies rapidly, and our houses seem the coldest during a hard blow, even though the thermometer may not indicate a

carefully so as not to break them; then, with a sharp knife, cut off the tap-low temperature. Again, orchards and the less hardy ornamental trees are often materially injured by cold winds when the same degree of temperature during still days would have no effect. The value of screens of some sort, then, seems clear enough. Anything made of wood decays easily, and unless kept in most perfect repair becomes unsightly, beside requiring a considerable outlay in the beginning. Small evergreens cost but little; their plantation is a pleasure: their care is amply paid for in their growth, and there is no waste of capital in their decay. If placed on the side toward the prevailing wind, from the building, walk, or orchard to be protected, they soon perform to perfect satisfaction the work intended.

I write about this topic now because at this season we feel the winds most and will be the most easily influenced to look into the matter, decide upon the location, and order the trees for setting next month.

As our country becomes gradually denuded of its forest growth something of this sort must take its place, to mollify our climate and keep up our credit as a thoroughly good State in which to locate.

S. Q. LENT.

HOW TO PLANT DECIDUOUS TREES.

The best time for planting is when trees and shrubs are dormant, that is after they have made their season's growth and before they have begun to start afresh. Deciduous trees speak for themselves; when their leaves have fallen they may be said to be at rest, and they should be transplanted before the buds have begun to swell, not that there is much mischief in a little delay, but the proper time is before the buds have become excited. The next point is to take up the tree with every fibre, if possible, undamaged, and more care is required to do this than many think proper to bestow upon it. I have seen valuable trees literally torn up by the roots in some nurseries because the men would not take the trouble to lift them properly. How, therefore, can such trees be expected to thrive for at least a season or two after removal? Again, if the roots are mutilated the head of the tree must be reduced in proportion. Moreover, in planting, the earth must be made to fill up all the interstices between the roots—there must be no hollow places; and, when a tree has been much mutilated, it is a good plan to puddle or, at least, make the pit, in which the tree is to be put, a kind of a mud hole, that is, pour into it two or three pailfuls of water, and throw in a cone of loose earth, on which the tree should be placed, spreading out the roots well and filling up all round with loose soil. By moving the tree sideways, backwards and forwards, lifting it now and then a little, and continuing to fill in with earth, it may be made a fixture at a proper height, and a little patience will enable you to hold it moderately firm until stakes can be put in to support it until the soil settles. This kind of treatment is unnecessary when trees are small and carefully lifted, as they should be. I prefer dry planting when the soil is in good order and finely broken; it can then always be got in among the roots well enough to answer the purpose. In that case the point of most importance is to take the plants up well. Dig round them in a circle, as far from the stems as the ends extend, and release the latter

root close to the stem, and all ends that may happen to have got accidentally bruised, and, having roughly estimated the quantity of root lost or injured, make amends by reducing the head in proportion. Cut out all weak shoots close to the stem, and remove any that grow upward or cross each other in the center, retaining only the best branches in the best positions, and if any of them be too long, shorten them. Then, having made a pit large enough to hold all the roots, fill in with some soft, well-worked soil, and press the roots into position, without bruising them. Hold the tree upright while the hole is being filled in, and shake it, in order that the soil may get well worked in between the roots. When the tree is properly placed, fill up the rest of the hole, and tread it well in, not by pressing the soil close to the stem, but by treading on it all round where the points of the roots are. When pretty firm, drive in three stakes, in a sloping direction, so as to meet at the stem, and to these fasten the tree, so as to prevent wind-waving. A much neater way, however, is to drive three posts into the ground, in the form of a triangle, and nail some slabs to them.

I have removed cedars, thirty-five feet high, and fastened them quite securely in this way, the posts being driven into the ground six feet deep. But though deciduous trees show us so well when they are at rest, that period is not so apparent in the case of evergreens. It needs close observation to ascertain when they are at rest. With some it is at midsummer, with others, later; but the cause of so many failures in transplanting evergreens is moving them when they are in active growth. If the foliage has attained its full size and proper color, and if the last growth made has assumed the same color as the rest of the tree, it may be transplanted with safety. If the ground where the trees are to be planted is dry, it must be well watered; and even on the branches the garden engine must be used if the weather is warm. Plants taken out of peat form an exception, for it frequently happens that a ball of earth, larger than the entire root space, lifts with them, and they are thus unaffected by removal. They do not, indeed, lose a fibre. To recapitulate, planting successfully consists, first, in removing a plant from the place in which it grows, without disturbing its roots much; secondly, if any roots have been lost, cut in the head so as to lessen the work which the roots that remain have to do; thirdly, in placing the tree again in the ground where it is to stand, solidly, and with the roots as nearly as possible in the position in which they were before removal; and, lastly, in supplying moisture, if it be deficient, and in so fastening the tree in its place that it shall not afterwards be injured through wind-waving.

RABLEY, HERTS.

EDWARD BENNETT.

[We think it right to add that, as regards moving evergreens, in many cases in modern practice, trees are frequently removed with perfect safety when in active growth.]—*The Garden*.

PREPARATION FOR THE GARDEN.

Prof. W. J. Beal gave a few practical, common-sense hints upon garden matters before the Michigan Agricultural College Alumnus Club the other evening. He said they were truths that were well known, and ought to be in general employment, but too often were utterly neglected.

PREPARATION OF THE SOIL

is a matter of paramount importance. Many people have never learned to do work thoroughly. They are in a hurry, short of help, or worse yet, think it is not worth the while to take very much pains in fitting the ground. A general rule, with rare exceptions, is that proper care in preparing soil and in giving thorough culture secures, as a requitement, good crops. Good yields are nearly always more remunerative than medium or light crops; *i. e.*, the extra labor required to produce a large yield is an expense which brings more than ordinary remuneration. This has been demonstrated again and again in a great variety of crops, in care of stock, and diverse occupations. We often excuse our own shortcomings by saying, or thinking at least, that we do as well as our neighbors.

It is best to fall plow gardens, especially if the ground is heavy. The manure should be well rotted and fine, but if by any mishap it is not in this well-prepared condition, it is well to plow it under in autumn and have it poked into the furrow by some attachment to the plow, or by boys following the team. For some early spring crops the ground need not be stirred more than four inches in depth. A good cultivating will often answer the purpose. But for most crops the ground should be carefully plowed after the manure is spread upon the grounds, and should be sub-soiled at least every other year.

The fine manure should be put on thickly, kept near the surface, and thoroughly incorporated with the earth. This can be done by plowing shallow both ways, or harrowing several times in different directions. An implement called a planer, constructed simply so as to smooth the ground, should be employed at last to remove all little inequalities. If the ground is lumpy the roller, followed by a light dragging, is good. If the ground is quite light I prefer to roll it just before raking with a garden rake. The raking by hand seems to be a tedious, costly process, but nothing pays better in raising a crop, for thus all lumps may be removed; rubbish which may have been distributed with the compost, and the distribution of manure is equalized and made thorough. Strong commercial manures like guano and hen manure should be very evenly and well mixed with the soil, or the result is liable to be disastrous. This was demonstrated in several of our experiments last season.

IN MARKING THE ROWS

so as to get them perfectly straight, draw a stout garden line on the side where operations are to begin, and by the side of this line run one tooth of the marker as you carefully pull it, walking backward. Every few lines draw this line again, so as to insure their continuance in right lines.

Value received is the resultant of economic management in making rows perfectly straight. If crooked the hand or horse cultivator must be set so narrow as to require much more hand working; and again, the cultivator may accomplish as much going through a row once if straight as twice if the lines are crooked.

ECONOMY OF LABOR.

A few years ago, while stopping for a season at a town in Northern Ohio, I was pleased to see an admirable example of skill in the management of labor. The foreman of the greenhouses foresaw a frosty night, and was anxious to get in the stock roses before they were nipped. He might have taken his hands and dug them, placing them under cover, to pot off at leisure. But the work had to be done sometime, and he proposed to make a clean job of it. Two of his most skillful hands were placed at the potting bench, with earth and pots convenient. Two boys were ready to remove and situate the plants on the greenhouse benches when they were ready. The foreman knew just how many plants could be well potted per hour, and the help out of doors was arranged so that the roses should be dug and delivered so that there should be an ample supply within convenient reach constantly at the bench. He counted the plants and tied the labels, regulating by his watch the amount of the delivery. The day's work thus accomplished with no friction was, I remember, something enormous. But the gauging of the labor so that each man did about all he could was to me a delightful example of labor management. When I see men binding after a reaper and so arranged that a part of them have to stand on the corners to wait while the remainder work beyond their limit to keep ahead of the machine: when I see with a threshing machine too much help upon the straw stack, and too few handing the bundles; when in the apple orchard I see men spending one-third of the time while gathering the crop in getting into and out of the tree to empty baskets or bags, I can not help but wish that among farmers there was the ability to employ help economically that I see in well regulated commercial establishments.

In years of abundance when the income from a crop barely requites the farmer for his expenses in raising it, often the whole profit lies in the economical use of his help while harvesting and marketing. It is not the man who can do the most work himself that makes the best farmer, for often such men cannot control or delegate labor with any success. A great step is gained when a man can so control his help as to have no waste motions or moments. Many farmers would do well to take lessons from the foremen in machine shops, and in manufacturing establishments.

Neither is the victory always accorded to the strong. There is a great deal of light work upon the farm that requires skill, rather than strength. The man who can make a good log heap, may not be able to earn his living picking fruit. This matter of acquiring skill at the various occupations upon the farm is of the highest importance. It is not nearly so worthy an achievement for a man to pick up a barrel of apples and throw it over the end board of a wagon as it is to be able to pick thirty barrels, assort and head them in a day.

It is an acquirement worth having to be able to shoulder alone continuously any number of bags of grain and throw them upon the wagon, but it is worth indefinitely more to be an expert in binding, so as to take up a quarter, or perhaps a third of what a reaper will cut in a day. It is to these acquirements that the farmer should look in the management of his labor. There is nothing like the employment of men so as to have each one doing that which he can do best and most quickly, and again in hiring men it is far better to look at skill rather than simply brute strength.

S. Q. LENT.

ANNUAL ROOTS.

At a late meeting of the Academy of Sciences, at Philadelphia, Mr. Thomas Meehan notices some of the hypotheses relating to the eccentricity of the annual wood layers. Mr. Meehan, in controverting the hypothesis that the thickening was in consequence of the rootlets near; or in consequence of the sloping of trees, thus causing a thickening on the under side, held the hypothesis to be inconsistent, and thought the true cause of the thickening of woody layers more on one side than the other, had yet to be explained. The rooting on the under side could not cause the thickening of the wood, as *Wistaria* and many others which he mentioned, rooting on the ground as they ran, did not thicken in consequence; while *Ampelopsis* did, as well as the poison vine. The rootlets by which the poison vine attached itself to the trees, had been referred to as being of some age; but this was a mistake, as in most cases, save some orchideæ and a few other plants, aerial rootlets, like rootlets beneath the earth, were mostly annual. The whole root system of plants was, indeed, but the analogue of that system which existed in the atmosphere. Morphology had made a great stride when it pronounced all the parts of the inflorescence but modified leaves. Botanical science had yet to go further. The whole plant was but a modified leaf, roots as well as branches. The same general laws that we found in the aerial system, therefore, had their correspondence in the terrestrial one. In the terrestrial system we generally saw a marked difference in the leaves and branches; but in some cases, as the arbor-vitæ and deciduous cypress, the two were so blended together, that at the annual "fall" season branchlets and leaves all fell together. In these cases we saw that some of these compounds of leaves and branches,—those the most favorably situated as regards nutrition,—maintained a hold on life, and, once passing this critical time, had an indefinite lease of life thereafter. It was precisely the same with the rootlets of trees. They were the representatives of leaves, and myriads died every year. Only here and there one endowed with greater vital privileges escaped the annual "fall," and then it became a "root," with various terms of endurance. Aerial roots, used by some creeping vines, were under the same laws. Now and then one would find itself in the soft crevice of an old wall, or in the decaying hollow of an old tree, and thus becoming a permanent feeder to the vine. In England the evergreen ivy had been cut down near the ground, after running for years over old ruins, and had continued to live on. But in these exceptional cases it was found that some of the rootlets, as the rule, annual, had found some soft place and taken on a permanent character,—had become real feeding woody roots. He exhibited some old stems of *Ampelopsis Virginiana*, which for years had been hanging unattached from the branches of a tree, and which had eccentric wood, as in the attached poison vines, and the surface was covered with aerial roots, which were produced and died annually.

MANAGEMENT OF LAWN.

Thomas McClumi, landscape gardener of Hartford, Connecticut, says of the management of lawns in America, that—

1. The drier climate of America requires a deeper and richer soil than England, to maintain a continued green through the heat of the summer.

2. Terraces are properly objected to and denounced, as being unnatural and discordant with true taste.

3. Sewers, where necessary, and underdrains, are the first requirements when a lawn is intended.

4. The reasons for drainage are, access to the air, and the admission of the rains to pass through it, so that "it is treated like a dirty garment, and is washed, aired, and dried."

5. Deep tillage and manuring are the foundation of success with American lawns,—the soil to be uniform in texture and quality, to prevent spots,—and trenching, keeping the rich soil at the surface, being essential.

6. Sow in freshly mellowed soil; and if there are many annual weeds, sow in autumn, that the winter may kill them; but if there has been much grading and filling, sow in spring after the settled surface has been smoothed. Steep hillsides are recommended to be sown in summer, to prevent washing; but we suggest a better way to secure the surface by the roots of a thin crop of rye sown the previous autumn, and then sow the grass among this crop in spring, cutting the rye away as soon as the grass is well established.

7. Roll in spring old or new lawns, to smooth the surface, and tiller the grass.

8. Avoid coarse or lumpy manure, and apply as a surface dressing either finely pulverized compost, or a mixture of guano and superphosphate of lime.

9. Keep the grass cut short from the first, to cause it to grow thick and form a dense carpet.

10. Never adopt the absurd practice of allowing the grass to grow tall, to cut for hay.

11. After many trials, the selection of grass for each acre is narrowed down to Kentucky blue grass, two bushels; red-top, one and one-half bushels; white clover, two to four pounds. For dry and gravelly ground, increase the white clover, and depend less on the grasses. Sow the clover and grass seed separately, as the latter is lighter and cannot be thrown so far.

WESTERN NEW YORK HORTICULTURAL SOCIETY.

The following notes are from the proceedings of the twenty-second annual meeting of the Western New York Horticultural Society.

CULTIVATION OF ORCHARDS.

Question No. 1.—"Shall we cultivate our apple orchards?" was called up for discussion.

Mr. E. Moody, of Lockport, opened the discussion by saying that it was quite an important question. A good many fruit-growers have advocated seeding down orchards, but he was wholly opposed to it. We hear of some orchards do-

ing well in grass, but we do not know the quality of the soil. He knows of two orchards in grass, which are quite productive—one in Niagara and the other in Wayne—but the soil in both cases is unusually good. Would like to have a committee appointed to visit orchards next summer, and report the results of the two systems. His theory is deep plowing and never seeding. Don't believe in seeding down a few years to promote fruitfulness. If you seed sometimes when you plow again, you break off the roots, which get too near the surface. Thinks in dry seasons, roots near the surface are destroyed.

Mr. James A. Root, of Skaneateles, has an orchard ten or twelve years of age, in grass, which he keeps in good condition by digging up and manuring a space about five feet in diameter, around the trees, with road scrapings. Removes hay from the ground, getting good crops of hay and fruit. The trees bear all he wishes, and are making a good growth. The codling moth is the only insect that infests his fruit, and they are quite as bad on grass as on cultivated ground. His trees have averaged about five bushels to a tree this year. Has trees in cultivation, and thinks they grow faster, and bear fairer fruit than in grass. Twig blight worse on those cultivated, than on those in grass. Have been in bearing six years.

Mr. H. E. Hooker said the question has more than one side. He would say that when trees were young they should be cultivated that they may grow rapidly, but whether, finally, it is best to cultivate or not, is not so clear. Beside his office are trees of Canada Red and Lady apples, which have stood in grass without cultivation for twenty years. The lawn has been mowed and nothing carried off. No manured or cultivated ground within 300 feet. Roots of apple trees will run 100 feet, and trees should be planted far enough apart to allow the roots to run. Where grass is grown as a crop, and removed, the trees are starved. Essential conditions of a productive orchard are, food for the roots, and sunlight for the leaves. Cultivation is not an essential condition. Can produce facts showing that trees thirty years in grass produced large crops.

President Barry.—Were you going into the fruit business with the object of raising fine fruit, would you cultivate your trees or grow them in grass?

In the earlier years of an orchard nothing but good culture and plenty of manure will answer; but when an orchard comes into bearing, rapid growth of wood is not calculated to produce the finest quality of fruit. Fruitfulness is promoted by seeding down and checking the growth. Pasturing with sheep or swine is an easy, practical way of taking care of an orchard, but manure must be used to keep up the fruitfulness. Starving trees in grass is the extreme of grass culture. Does not assert but what greater burdens of fruit can be grown by high culture, but cost must be considered. He has as good quality of fruit in grass as in culture, but can not have fine fruit in a crowded orchard.

Mr. Root would not have it understood that he thinks partial equal to entire culture, but where grass is desired, partial culture will grow full crops.

W. C. Barry referred to a test made by Prof. Beal, of the Michigan State Agricultural College, Mr. Henry B. Ellwanger, H. D. Adams, and others, touching the quality of fruit grown on cultivated and uncultivated trees. He thought this a good time to discuss this question. According to the experience of the gentlemen before mentioned, it appeared that fruit grown on cultivated trees while it was, in general, paler, was nevertheless the best fruit. Fruit grown in seeded orchards looked redder, but the quality of the fruit was not so good.

Mr. H. Dale Adams, of Michigan, said the fruit growers of his State did not

look for a good crop of apples except in cultivated orchards. Confirmed what W. C. Barry had said in regard to fruit being higher colored on grass land, but of better quality in cultivated orchards.

Mr. Smith, of Albion, wanted to know if Mr. Hooker keeps his orchard in grass. He has a large orchard and would cultivate it while young, but when it gets to be fifteen or sixteen years old crops off the ground do not amount to much, and would like to know if fruit would do as well in grass. Should think fruit would be coarser on cultivated than on grass land.

President Barry remarked that we have seen peaches growing on trees affected with "yellows," highly colored but poor.

Mr. Hooker does not pretend that slovenly treatment of orchards will do. He maintains that what is called culture is not necessary for good crops. It is a mistake to suppose that continual plowing is necessary for good crops. Plowing will not answer in place of fertilizing. Good apples are the product of trees with good soil and sunlight. In a good many of our orchards, when fruit is cheap, economy is to be considered. Plowing costs money, while pigs will pick up the wormy fruit, and get their living.

Prof. C. H. Dann, of Warsaw, has no theory but is seeking light, for he has planted large orchards. There is an old orchard near him of one acre. The owner has become rich by farming, and has often said to him that the net profits of that acre is more than ten of farm land. It has borne as many as 300 barrels and the product has sold for \$600 to \$1,000 a year. Has kept trees clean from suckers and superfluous wood, and once in three years dresses it with manure. Occasionally plows it up and harrows for a year or two and seeds again. All that is taken off the orchard is fruit, and he does not gather less than 100 barrels a year, and sometimes 300 barrels. Has but very little poor fruit, and insects do but little harm.

Mr. Moody did not mean to be understood that plowing is all of cultivation. He would not crop after an orchard is in full bearing, but would manure.

J. S. Woodward, of Lockport, favors grass in an orchard, but would never put any in that had not gone through an animal. In drouth, grass land is dry but cultivated is moist. Went by an orchard, part in grass and part cultivated and could distinguish the separating line as far as he could see the orchard, by the color and growth of leaves. One side of a tree overhung a cultivated garden and the other was in grass; the one side was loaded with fruit and the other had not an apple. Another man had an orchard in hog pasture which did not bear. Plowed it up and has good crops. Does not favor very deep plowing. His orchard will pay him \$80 an acre this year. Don't want it to go out that this society recommends grass in orchards.

A. J. Rice,odus, Wayne Co., said that Yeomans would keep his orchards in grass as long as he could get manure, but when supply failed, would raise and plow under green manure. Sows corn in spring and rye in fall, plowing them under.

Mr. M. B. Bateham, of Ohio, believes in cultivating orchards, and that it is the only way you can grow good apples in Ohio. Believes in hog cultivation. Can not persuade Ohio farmers to trap the codling, but hogs and sheep will reduce their numbers. Sheep must not be kept too long in orchard or will gnaw the trees. In regard to color of fruit: he was on the Michigan Committee, and they agreed that high color was evidence of lack of nutriment, foliage less rank, and fruit less shaded.

Mr. John Craine, of Lockport, said all fruits are better where the trees are

not too flourishing. Not in favor of keeping orchard in grass a great while at a time, but if growing too fast and not fruiting, would seed it down. Said to be great amount of manure in an acre of grass. Thinks green manuring the most economical way of manuring.

Mr. A. G. Newton, Parma, would ask if an orchard of twenty acres would yield fruit at the rate of from 100 to 300 barrels per acre? A single acre will draw nutriment from quite a distance around it.

Mr. James C. Allis, of Holly, said his orchard has not yielded more than one half as much when in grass as when cultivated. Has received best returns by plowing under buckwheat, and allowing hens to run in the orchard.

Mr. Henry Quinby, of Rochester, has had more than thirty years of experience, which has satisfied him that cultivating and manuring is the better way.

Upon motion of John J. Thomas, of Union Springs, it was resolved that a visiting committee of two from each county, be appointed to visit orchards next summer, and report at next meeting which system, grass or culture, is best.

Mr. Woodward said that Peter Miller, a neighbor, formerly fed a great many cattle, and used their manure on his orchard of fifteen acres. His soil is very rich and trees very large. Last year sold his fruit for over \$6,000. Has never been seeded. One year sold his fruit for \$9,000. First twelve years cropped his orchard, but since has plowed, cultivated, and manured. The last two or three years has used no manure but ashes.

Mr. A. C. Younglove, Vine Valley, would enter his decided protest against seeding down an orchard. Manure with anything, but sow no crop, clover in particular. There is virtue in coal ashes.

J. J. Thomas, being called out by the President, said that no general rule could be adopted in the management of orchards, applicable alike to all soils and circumstances. If a farmer asks us if he should give his horses higher or more spare feed, we would naturally inquire what their present condition is before giving an answer. In the same way, we can not say whether an orchard needs richer culture until we know whether that orchard is already too feeble or too thrifty. To prescribe a rule for all orchards alike would be quackery. Yet for the soils of Western New York it would be safe to say that all young orchards should be well cultivated for many years while young. Afterwards, on very rich soils they might be seeded to grass and pastured short by sheep and swine. In the rich lands of the West they might require no culture; at the East very rich culture—according to circumstances. Some soils are deep, and the roots of trees run three feet deep into the subsoil; this might be plowed deep without harm; in other more shallow soils the roots would be nearer the surface, and shallow culture would be essential. One of the most important truths for all orchardists to understand is the length of the roots. Trees fourteen years old have been found with roots that have extended thirty feet on each side. Mere circles of cultivated soils would be of no value to these; the whole surface must be subjected to cultivation.

The Michigan Agricultural College demonstrated that a circle cultivated ten feet in diameter around the trees had no effect, but ten feet in grass and remainder cultivated, had all the effect of entire cultivation. One of the finest orchards he ever saw was in Pennsylvania, and part was in grass but heavily manured, and the other cultivated but not manured. If soil is rich enough fruit will grow in grass.

Mr. Hooker wanted to know if Mr. Thomas' illustration was not evidence that plowing will not take the place of manure. Manure is essential, cultivation non-essential.

Mr. Thomas replied that cultivation will not make trees grow where there is no soil. There are soils where they will grow without cultivation, and soils where cultivation is necessary and cheaper.

Mr. Israel Arnold, of Benton Center, Yates county, has four small orchards. One of sixty trees, near his house, has been planted twenty-two years, never had a plow in it, and since it commenced bearing never failed of a crop. Manures every three years. Has another that was cultivated the first twelve years, then seeded, and has had no plow in it in twenty years. When he bought it, had it manured, and has kept hogs in it. Gets good crops every alternate year.

GRAPES.

Question.—Have we reached the height of excellence in grapes? If not, what qualities are still wanting?

Can the grape be grown for market profitably in western New York?

A. C. Younglove, Vine Valley, hardly thinks we have reached the height of excellence in the grape. We want more sugar in our grapes. Would not wish to change the growing qualities of Delaware, Agawam, and Salem, but would like a little more sugar in them. Could wish that Catawba were a little stronger grower, but would not change cluster. Would make Delaware 115°, Catawba 96°, Agawam and Salem from 96° to 100° on saccharometer. No grape grown in California, or on foreign soils, that would equal these grapes if made as sweet as indicated. Grapes *can* be grown with profit. We get our entire living out of grapes. We take hold of our vineyards as a market-gardener would manure his garden. A great many vineyards are dug up because not managed right. They have tried to raise grapes without labor and intelligence. No two varieties will admit of the same treatment. We must know the wants of the soil and the habits of the grape. We learn something every year. They have set-backs, principally from dry winters. Isabella and Concord are grown, but are less profitable than the varieties mentioned. No Jonas or Crotons grown. Regards Delaware as strong as any, but wants a good soil, such as would produce twenty-five bushels of wheat to the acre, and then judicious pruning. Must learn by repeated experiments how to manage every kind. Catawba improves after maturity; has never failed to ripen it. Finishes shipping by the 5th of October. Late grapes sold highest. Rogers' four and forty-three best black grapes good for own table, but will not sell with red in market. Customers call all blacks Isabellas, and they will sell for no more than that variety. The Rogers bear uniformly, and set their fruit in good condition. If they ripened at the same season and were mixed together, Salem and Agawam could not be distinguished. Wilder, Downing, Fuller, and Rogers himself, tasted them on his ground and could not tell which was which. Any man who will get up a good white grape equal in appearance to the Concord has a fortune. Never saw mildew on those Rogers, or on the leaves.

Mr. LaRue, Hammondsport, believes in the Catawba. Yesterday shipped from down the lake half a ton to New York, for which he received 20 cents a pound. Good cultivation makes it pay in his valley. He has 20 acres which costs \$500 a year, and brings in \$3,000. All who have cultivated intelligently have made it pay. His section will be mostly set out with Catawba.

Mr. Younglove said it was common for vineyardists to say that the business is "played out," but Mr. LaRue and he knew that men do better in that than in farming. Major Hixon has 1,300 vines,—two acres,—and has never taken less than \$800 a year. Uses ashes if he can get them, hen manure mixed with

cheaper manure. Also uses much night-soil. Dry it with road dust every day and it is perfectly deodorized. Spreads broadcast, and cultivates it in. Level land, plows in fall, but terraced land, cultivates only.

Mr. Craine would like to see much improvement, even in the Delaware. Would like to see a larger berry and cluster, a healthier leaf, as it sometimes mildews. Has had one failure in twelve years. Has made more money out of the Delaware than any other grape. Concord has failed oftener than Delaware, but not from mildew. Thinks we can grow more with profit. Others had made it profitable. One had sold Delaware in Massachusetts for 12½ cts.; Rogers for 15 cts.; Salem from 12 to 15 cts. Shipped Delawares in boxes holding 2 lbs. each, Rogers in baskets holding 20 lbs.

Mr. Hooker does not believe that we have reached the height of excellence in some directions. Thinks we can sacrifice seeds and gain in sweet quality of American grapes. Can not get all the fine qualities in one grape. If we want higher flavor, we can get it; if we want wine we can get that; we have not reached the highest by a great deal. We want a handsomer bunch in some, longer keeping qualities in others. Mr. Moore thinks we want hardiness and quality combined. Mr. George Ellwanger said Catawba is our best flavored grape, but will not mature in many localities. Mr. Craine thinks Concord needs a tougher skin, so we can ship it. No black grape pays to send to an eastern market. Rogers No. 39 is a good black,—better than No. 4.

George S. Conover said it is not always best for this society to recommend those that sell best, but such a society should educate the tastes of the people.

Mr. Hubbard agreed with Mr. Hooker that we must sacrifice in one direction to gain in another. We want better quality and healthier foliage. There is now no grape that combines those qualities. Thinks the prospects now better for profitable grape culture, in Western New York, than for years. Three-fourths of the vineyards have run down, and those who cultivate well and intelligently will succeed. Catawba, one of the best on the lake. Delaware does well on rich soil but sometimes affected with leaf-blight. Concord, so far, most profitable. No one variety best in all sections. Each locality must determine for itself. He would plant half Concord; Delaware, Salem, Rogers' 15 do well. Grapes have deteriorated from some cause; once could ripen Isabella every year, but now it fails every few years. Mr. Babcock thinks there are no successful vineyards, inland, but they succeed along the lake.

C. L. Hoag said, if we select the right varieties, no other fruits pay so well. Has a vineyard of Hartfords that has not failed in twenty years, and he considers that variety the most profitable. Rogers sell for no more than Isabella. Geo. T. Fish has grown a few acres of Concords and Hartfords, and they pay for labor and interest on land. They have never failed but one year. Jones thinks that some vineyards away from the lake pay very well. Concord and Hartfords pay better than other varieties.

Hooker had noticed what appeared like tar on some of the leaves and grapes, and inquired if any one knew anything about it. Craine, Barry and Hubbard thought it black rust.

II. Dale Adams said, we need a grape in Michigan of the size, productiveness, and hardiness of Concord, and of better quality. Asked growers to mention their most profitable varieties. Hubbard said, Concord; Jones, Concord; Hoag, Hartford; Craine, Delaware; Hooker, Delaware; W. C. Barry, thinks Hartford more profitable than Concord, ships better, and has a longer period.

PLUMS.

Question.—Can plum culture be made profitable in Western New York?

This question, which was passed over in its regular order, was now called up and Mr. George Ellwanger, of Rochester, read the following paper on "The Plum—Its Importance and Value as a Market Fruit:"

Your Committee on Foreign Fruits have omitted the usual report. Owing to various causes very few new fruits of special value have come under their notice, and in its stead they have decided to say something on the plum.

It seems strange that a fruit in such demand, at good paying prices, should not have received more attention at the hands of Fruit Culturists.

Whether the bug-bear, the curculio, or a want of knowledge of its value as a market fruit is at fault, we are at a loss to determine. Certain it is that an important branch of fruit culture has been neglected in this country, and what might be rendered a valuable source of revenue, has been allowed to remain comparatively unnoticed.

In Europe a more proper estimate is placed on the plum, as a market fruit, both for export and home consumption.

In many parts of the continent the returns received from plum culture far exceed those of pears and apples combined, the varieties of prunes, especially, being grown on a vast scale for drying purposes.

In some places plum culture gives rise to a special industry—the manufacturing of plum brandy, which is considered by many equal to the celebrated "Kirschenwasser" of Switzerland and Germany.

In several departments of France the culture of the Reine Claudes is also a source of immense revenue to those who engage in it.

Large quantities of French and German dried prunes, put up in various forms, are disposed of in the American market at good prices, there being no domestic article offered in their place.

The home supply of green fruits, even where they are most extensively grown, has never yet been equal to the demand. Even as a table or dessert fruit it is comparatively but little known, the knowledge of its qualities being generally confined to the common yellow egg, and the small blue plums of the country.

The only blue plum orchards of any importance in a bearing state, are those on the Hudson river, that in part supply the New York market. In Ohio, however, the planting of plum orchards on an extensive scale has been taken up more vigorously within a few years, and received through the efforts M. B. Bateham, an impetus that will do much to swell the revenue derived from fruit culture in that State.

The plum is one of the most easily cultivated of fruit trees, although a heavy loam is preferable, and thrives in our severe climate, where the peach tree does not succeed.

Its time of ripening, in a well assorted collection, may be extended from August to early winter. It is a regular bearer, and its fruits always command a ready market. The price of good plums in our market last year averaged \$3.50 per bushel. Some of the very finest sold as high as \$7 per bushel, and the supply of a first-class article was very limited.

The trees should be planted about fifteen feet apart for an orchard, and kept under clean cultivation. It requires but little pruning, sufficient only to maintain it in proper shape. After being in bearing a few years, the trees should receive an annual top-dressing, which proves more beneficial when varied each

year: stable manure, wood ashes, salt, or other fertilizers being used in rotation.

Old stunted trees will derive much benefit by a cutting back of the old limbs to within a reasonable distance of the trunk.

Thinning out is invariably necessary to insure fine fruits. In this the cultivator is assisted by the much dreaded curculio, which, however, under the jarring process adopted by plum culturists of late years, has ceased to prove a hindrance to the successful raising and maturing of the crop. The curculio question has been so fully discussed, and its nature is so well understood, that we deem it unnecessary to particularize further.

These few facts borne in mind, there is no reason why plum culture should not prove as successful in this country as that of the apple and pear. We have no doubt that as soon as its importance is fully realized it will become a leading feature of fruit culture.

From our own orchard, which has been in bearing for the past thirty years, and contains one of the most complete collections in this country, we select the following list as the best, in our opinion, for general cultivation:

Although we have divided them in several classes, viz.: For desert, cooking, market, and drying,—almost any are suitable for cooking purposes. Fellemburg, Coe's Golden Drop, Peter's Yellow Gage, and Reine Claude de Bavay are among the best for canning.

Of the prunes, the Fellemburg and German prune are doubtless the most valuable in this climate for drying, the former being the largest and richest, and the latter the most prolific. The Prune d'Agen is in great repute in France, and is also excellent in this country.

The Wangenheim is very rich and fine.

For description of varieties, we refer to the Pomological works and leading nursery catalogues.

For Dessert.—Royal Hative, Royal de Tours, Bleeker's Gage, Coe's Golden Drop, Green Gage, Imperial Gage, Jefferson, Lawrence's Gage, McLaughlin, Peter's Yellow Gage, Reine Claude de Bavay, Washington, Yellow Gage, Prince Englebert.

For Cooking.—Goliath, Lombard, Magnum Bonum Yellow, Victoria, Pond's Seedling, Shropshire Damson.

For Drying.—Fellemburg, German Prune, Prune d'Agen, Wangenheim.

Most Profitable for Market.—Bradshaw, Coe's Golden Drop, Fellemburg, Lombard, Magnum Bonum Yellow, McLaughlin, Peter's Yellow Gage, Reine Claude de Bavay, Shropshire Damson, Victoria.

THE LILAC FOR ORNAMENT.

The committee on ornamental trees and plants, through their chairman, Mr. George Ellwanger, reported as follows:

Among the hardy, large growing ornamental shrubs, the Lilac justly occupies a prominent place,—indeed we consider it second only to the Magnolia as an ornamental flowering shrub.

It is a universal favorite, and fully merits Loudon's encomium, "Beautiful in leaf, and preëminently so when in flower."

The common purple and white varieties, like the red *Pæonia* and *Snowball*, are familiar to all. They may be seen in almost every farmer's garden, regaling the passer-by in their flowering season with their delicious perfume.

Their swelling buds and pale green leaves are the first of advancing vegeta-

tion to proclaim the advance of spring, and are always intimately associated with the return of the genial season. In this connection Cowper's description of the Lilac is worthy of quotation :

"The lilac varies in array; now white,
Now sanguine, and her beauteous head now set
With purple spikes, studious of ornament,
Yet unresolved which hue she most approved
She chose them all."

The colors and shades of its flowers, in its many varieties, are manifold, and no less in this respect than in their delicate grace and exquisite fragrance do they merit the esteem of the lovers of floriculture.

It is adapted to almost any soil and climate. In park or garden, lawn or hedge, it lays claim to distinction for effectiveness and beauty. In city gardens, where there is only limited space, it is one of the cleanest and most satisfactory of shrubs, either as a well-shaped bush or a low tree with neatly balanced head.

But it is in large places that its charms can be displayed to the best advantage. In lawns, where large clumps of the snowy-colored varieties can be planted, it has few superiors in point of brilliancy and fragrance. Clumps of Lilac Josikaea are introduced with fine effect in the Central Park, and, when in flower, are among its striking attractions.

In this climate it takes the place of the Rhododendron, so much prized in England. Besides being very hardy, it has the additional advantage of its fragrance, which the hardy Rhododendrons do not possess.

In grounds sufficiently large, it can be used for ornamental hedges. Its dark green foliage is not affected by atmospheric changes nor has it any insect enemies. It, therefore, always forms a clean and handsome background, and when in flower, is a feature of the park or garden.

Where Privet hedges are already grown, the Lilac can be grafted with no little effectiveness, at intervals of about ten to fifteen feet. The Lilac grafts, when grown, project over the Privet, and form round or pyramidal heads, varying the monotony of the ordinary formal hedge.

By many the Lilac and other highly fragrant flowering shrubs are considered invigorating and healthy as atmospheric purifiers and dispellers of noxious vapors. I well recollect when the cholera was raging throughout Europe, in, I think, 1830, the *savants* of the city of Stuttgart, where I was then residing, ordered the burning of fragrant herbs in the market-place, to prevent infection. Whether owing to this means or not, the city escaped the dreadful scourge.

Culture and Management.

Although it will thrive and flower in any soil, an annual top-dressing of stable manure will well repay the trouble and expense, in the fuller development and beauty of both flowers and foliage.

Half standards for single specimens can be grown either on their own roots, or grafted on the common sorts, as well as on the Ash or Privet. In order to render them attractive they must have well balanced, bushy heads, and be kept in form by regular thinning and pruning. After the flowers have faded they should be removed, in order to cause new growth that will ensure profuse blooming the following season. By this means the flowers may also be very much enlarged.

For winter Flowering.

In all large continental cities, and particularly in Paris, the lilac is in great request for winter flowering. The common purple is generally used for forcing, and when kept in houses, darkened by mats or otherwise, produces pure white flowers. In order to produce the best results, the plants should be carefully selected in the spring, and planted in pots; then plunged in the ground during the summer, and kept well watered. In September they should be re-potted into rich compost and, in succession according as required, be placed in an atmosphere of sixty to seventy degrees Fahrenheit, which should gradually be increased to eighty degrees, and even as high as one hundred degrees. The roots should be well supplied with water, and the plants should receive frequent syringings with tepid water. They may also be taken up carefully with balls in the fall, to be forced the following winter, but we recommend the former method. When no forcing house is accessible, a warm room answers very well in its stead.

In winter, with the rose-bud and violet, it is the most fashionable flower in Europe, especially in France. For a window plant it keeps in bloom a long time, and has no superior. As a florist's flower in winter, it is in great demand. The Persian varieties are also used for forcing, the flowers of which are more delicate than the common purple. Through hybridization many valuable varieties have been added to the lilac group, of late years, both in this country and in Europe.

In the following list we desire to introduce and make known some of the best and most striking varieties, consisting of all colors and shades from the darkest red to the purest white:

Persica.—A native of Persia of dwarf growth, four feet to six feet high, with small foliage and bright purple flowers. No shrub will give such grand effect when in flower, even the Rhododendron can not vie with it.

Persica Alba.—Of somewhat less vigorous growth than the above, with delicate white flowers shaded with purple.

Flore Pleno.—Double purple, resembling in color the common purple, but has a double row of petals.

It is much admired, being the only double variety.

Grandiflora.—A very vigorous growing variety, with panicles of bright purple flowers of unusual size.

Virginalis.—A most charming variety with large panicles of pure white flowers, and dark green foliage.

Emodi.—A native of the Himalayas, very large and fine, delicate purplish lilac flowers in erect dense panicles; a very free bloomer.

Sinensis.—A species resembling the Persian, but of more vigorous growth. Flowers of redish purple, a most prolific bloomer, in fact the whole bush is a mass of flowers.

Josikwa.—A very distinct species with shining leaves, and purple flowers blossoming from two to three weeks after all the other varieties of lilacs, and when very few other shrubs or trees are in bloom.

Duchesse de Nemours.—Flowers light purple, distinct and fine.

Nana.—A very distinct dwarf variety, with large and compact spikes of dark reddish purple flowers.

Speciosa.—One of the most flourishing new varieties, with very strong spikes of bright reddish flowers.

Gloire de Moulins.—Panicles very large, of very fine, rosy, lilac color—a superb variety.

Carulea Superba.—Flowers light purple when in bud, but, when fully open, a clear lilac; truss very large; the finest of its color.

Alba Grandiflora.—Large, pure white brushes of flowers; considered the best white.

Prince Nottger.—Delicate bluish purple; flowering early.

Rothomagensis Rubra.—This is one of the most showy varieties, flowers reddish, panicles of great size, often measuring eighteen inches in length and very abundant—planted in clumps on lawns.

WHAT IS IN A NAME?

In the early days of Michigan the fruit raised here comprised but very few varieties. Some of these we still cultivate, and pronounce them very good for the table, for market, or for cooking. Among these are the Early Harvest, Fall Pippin, Snow Apple, Red Canada, Rhode Island Greening, and a few other apples. Of pears there were very few varieties, and the Summer Bon Chrétien was among the best, for it was far better, as an eating pear, than the fruit from the old French pear trees. We still find it in some of the gardens, and when it is well grown it is a delicious fruit.

Of peaches, we had some very good varieties, but more that were not worth cultivating.

Of plums, we had the Washington, Yellow Egg, Purple Egg, Damson, and a few others.

Of grapes, the Isabella and Catawba were the principal.

As the State has increased in population and area of cultivated lands, improved varieties of fruit have been introduced; orchards have grown up and are producing abundantly, but many trees and many orchards have been planted without that knowledge and discriminating care in the selection of sites, of trees, and varieties essential to the greatest success.

Not many years since a few enterprising cultivators, seeing that Michigan was destined to become a leader in the production of fruit, deemed it important that they should acquire additional information with regard to the selection of trees, sites for orchards, varieties to plant, and how to cultivate, and as a means to this end they organized an association under the name of the Michigan State Pomological Society. This name was indicative of their wishes, viz.: the improvement of fruit culture in Michigan.

This Pomological Society has worked hard, and in the right direction. It has, by its meetings, conversations, discussions, lectures, committees, and researches gathered up and put on permanent record a vast amount of valuable information that is highly appreciated by all who have had an opportunity to know of its work. The result thus far obtained has been of great benefit to the State, also to cultivators and the partakers of their beautiful and luscious fruits.

Seeing the success of the Pomologists, the florists and the cultivators of culinary vegetables, are desirous that the Pomological Society shall take broader

ground, discard that part of its name which relates to only one department of horticulture, and adopt the name of "the Michigan State Horticultural Society," thus giving prominence, care, and guidance, not only to one, but to every department of Horticulture. Indeed, the Society has already done something for the advancement of horticulture in general, by publicly noticing the display of plants, flowers, and vegetables at the regular meetings of the Society; but more especially by the premiums awarded in the horticultural department at the fairs of the State Agricultural Society, thus indicating a willingness to act in concert with the florists and the vegetable gardeners.

The orchard in full blossom is a beautiful object; it attracts the attention of the passers-by; but if, in addition thereto, the surroundings of the dwelling are made beautiful by the introduction of ornamental trees and plants, a smooth lawn and a well cultivated kitchen garden, the passer-by is very apt to linger and admire, and say, here dwells peace, pleasure, and home comfort; here are attractions for the old and the young; it must be a pleasant, happy home. So, too, the meetings of the Pomological Society are far more pleasant and attractive when the room is ornamented with flowering plants and bouquets of flowers. A good display of choice culinary esculents does not detract from the interest and beauty of the show.

The value of botanical knowledge, and information with regard to insects and birds, what insects and birds to destroy and which to protect, is not confined to any one department of horticulture, but such information is valuable to all alike.

This Society, I am glad to say, recognizes and appreciates the value to its members of this kind of information, and this appreciation is frequently manifested in the programme of its exercises.

The pomologist finds that he is annoyed by the depredations of insects, and it soon occurs to him that it would be well to know what the insects are, their names and habits. If he is not already posted in this regard he seeks information from those who have by observation and study become familiar with the subject. The habits of some of the birds are a mystery to him; he is apt to think that if the robins are of any service, which he sometimes doubts, they overpay themselves by stealing some of his fruit and damaging more. The florists and the vegetable gardeners are similarly situated.

In view of all this, I will now advocate, as I have done before, the striking out of the name the word "pomological" and inserting in its place the word "horticultural," that the Society may be known as the "Michigan State Horticultural Society," and that all horticulturists, whether engaged more especially in one or all of its departments, may feel that under this name they are in full fellowship with all of its members, while under its present name the florists and vegetable gardeners cannot.

J. C. HOLMES.

POMOLOGICAL VERSUS HORTICULTURAL.

To the President and Members of the Michigan State Pomological Society:

GENTLEMEN,—I wish to present for your consideration, a few thoughts on the subject of the proposed change of name of our society, and a few of the reasons why I am opposed to it.

The society was organized for a specific purpose. Has that been accomplished? I think that no one will claim that it has.

Though much has been accomplished, in which not only every member of the society, but every intelligent citizen of the State has just cause for pride; still we are only in our alphabet of what we ought to know and really mean to learn. Secretary Thompson says, in an editorial in the *Michigan Farmer*, of October 31st, last: "There seems to be a general impression that this society has outgrown its swaddling clothes," etc. True, and it has exchanged them for garments in which its best friends were not ashamed to have it seen at the meeting of the American Pomological Society held at Chicago in 1875.

Again it made a public appearance away from home, in 1876, at Philadelphia, in competition with all kindred societies of North America, and it was declared to be not only becomingly clothed, but that its clothing was of the best quality, the latest style, and the finest texture.

This was the unanimous verdict of nearly all of the thousands who saw and admired our centennial exhibit. This ought to be satisfactory evidence that it is becomingly attired. Its age is less than seven years. Its achievements have perhaps never been equaled by a society of its age. Why? Because it has concentrated its efforts in a direction in accordance with the tendency of the age,—a specialty.

Mr. President, when I consider the great achievements of our young Society; the honorable name it has won, at home and abroad, the thousands of dollars that it has cost the people of the State, in money, and other thousands in time,—more valuable than money to the enterprising fruit-growers,—when I consider all these, I am astonished that any member that has taken an interest in its welfare should be found willing to exchange the honorable name under which we have accomplished so much, for one new to us, and without the prestige of success. As far as I am able to judge, more than nine-tenths of those engaged in pomological pursuits, are opposed to the proposed change. As proof that this is true, I offer for your consideration a resolution, which, after a thorough discussion, was passed unanimously. The resolution reads as follows:

Resolved, That it is the sense of the South Haven Pomological Society that Article I, of the State Pomological Society should not be altered or amended.

There is one other point, to which I wish to call your particular attention. It is assumed by those in favor of the change that Pomology is one division of horticulture. This is very clearly and forcibly set forth in an editorial in the *Michigan Farmer* of November 23d, 1875, as follows:

"It is claimed that *Pomological* is not comprehensive enough to include all the departments which the Society is obliged to recognize;" that "Pomology simply includes and designates the science which treats of fruits, their culture, description, history and improvement. This is correct." "Pomology is only one of the divisions into which Horticulture is necessarily separated, for the convenience of those who make it a study either practically or professionally." Those who first formed the Society were influenced solely by the desire to improve fruit culture in the State, etc. "the Society however has outgrown its own limits." "Some propose that the Society shall be called the 'Pomological and Horticultural' Society, but it will be readily seen that the use of the word 'Pomological' would be simply an unnecessary addition and a mere repetition. Horticulture includes all that refers to fruits, and is of itself comprehensive enough."

The foregoing are the views generally accepted by Horticultural Societies, without a thorough investigation of the subject however, in our opinion, or they would arrive at a very different conclusion. The legitimate use of words is to convey ideas; and the word that will convey to the mind an idea in the clearest and most distinct manner is the best word to use.

If pomology is one division of horticulture, Mr. Johnson will be able to tell us of some standard authority where it is to be found, for I have been unable to find it, though I have searched diligently. We want the authority quoted, or we cannot accept the position as correct.

The question at issue is this: Does horticulture include pomology? I think not; and to sustain my position, I can do no better than to introduce a portion of an article, written by myself, and read before the South Haven Pomological Society about one year ago.

Questions of this kind can only be brought to a satisfactory solution by referring to the standard authorities for a correct definition of the word or term in dispute. In this country Webster is considered the standard authority. Let us see what he says on the subject. There appears to be no disagreement as to the meaning of pomology; we may therefore proceed at once to the definition of horticulture:

"Horticultor, from *Hortus*, garden, and *cultor*, cultivator; a person who cultivates a garden.

"Horticulturist, one who is skilled in the art of cultivating a garden.

"Horticulture, Fr. from Lat. *hortus*, a garden, and *collo*, I till.

"Horticultural, relating or pertaining to garden culture. In its most extensive signification, the cultivation of esculent vegetables, fruits, and ornamental plants, and the formation and management of rural scenery, for the purpose of utility and embellishment." "In this article the three great divisions of Horticulture—fruit, kitchen, and flower garden—will be more particularly alluded to. Although the fruit and kitchen garden affords the most useful occupation to the Horticulturist, the cultivation of flowers affords the most pleasure."

Please notice that Horticulture, and all its derivatives, refer distinctly to gardening. Reference being made so often to garden, let us inquire what is a garden? Webster says: "A *garden* is a piece of ground enclosed and appropriated to the cultivation of herbs and plants, fruits and flowers."

"Gardening, the act of laying out and cultivating a garden.

"Gardener, one whose occupation is to make, tend and dress a garden."

Thus we find that gardening and horticulture are convertible terms, and mean precisely the same thing.

Because fruit is mentioned in connection with horticulture, it appears to be taken for granted that it includes everything relating to fruit when the fact is it has no reference whatever to fruit, except, as connected with *gardening*. Some of our encyclopedias do not mention fruit at all, as being included in horticulture, or in connection with gardening. There is another point worthy of especial consideration in connection with this subject. Authors, in writing on subjects, where it becomes necessary to make divisions of them, always give prominence to those of greatest importance. Let us apply this rule to our subject—horticulture. If *Pomology* is included in this, it is clearly one of the most important divisions; and yet, in the definition of this term, and all its derivatives, it is not mentioned at all; while the comparatively insignificant division of culinary vegetables and flowers are mentioned in every case. This is another very strong proof that fruit is *not* included, except as connected with gardening.

In order to present this matter in as clear a light as possible, we will place the terms in juxtaposition. Observe closely:

"Pomology, the studies and science of fruits, their history, cultivation, description and improvement. ("As a specialty," we add.)

"Horticulture, a garden I till.

"A garden, a piece of ground enclosed and appropriated to the cultivation of herbs and plants, fruits and flowers.

"Gardening, the act of laying out and cultivating a garden, horticulture."

Horticulture and gardening are synonymous and convertible terms, and include everything pertaining to fruit growing in the garden. Pomology is the science of fruits, and includes everything pertaining to orcharding, or fruit-growing outside of garden culture. It is impossible to use more explicit language, and after reading it carefully I think it will not be so "readily seen that horticulture includes all that refers to fruits, and is of itself comprehensive enough." The two words refer to two distinct divisions of fruit culture, and this ought always to be kept in view.

The Farmer says "the Society has outgrown its own limits." (Doubtful.) "That pomological is not comprehensive enough to include all the interests that the Society is obliged to recognize."

Perhaps this view may be correct; suppose the horticultural interest is included, there is every reason to believe that the pomological interest will continue to be the most important, consequently the leading interest. If this is correct, where is the propriety of discarding a name that clearly and unquestionably expresses the primary objects of the Society, and adopting one that has reference only to a branch of secondary importance?

If it is thought best to include other interests, let them be annexed, but not supersede one of greater importance. Instead of having outgrown our limits: we are only in our infancy. Practical pomologists in our State comprise but a small minority of the inhabitants, but they represent an interest that is making giant strides. Its beneficent influence is felt and acknowledged in all parts of our State. Our State Society includes the best talent within our borders; men of practical ideas, who make the study of pomology the leading business of their lives. This is the reason why our Society exerts an influence felt and acknowledged by all departments of our State government, as well as the people. The name has become a tower of strength and a household word, let us preserve it.

I. S. LINDERMAN.

SOUTH HAVEN, MICH., November 27th, 1876.

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